

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2291.—Vol. XLIX.

LONDON, SATURDAY, JULY 19, 1879.

PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, £1 4s.

WEIGHING MACHINERY

for all Commercial purposes and graduated to any NATIONAL STANDARD by Patent Machines

HODGSON AND STEAD LIMITED ESTABLISHED 1852.

EGERTON IRON WORKS
REGENCY ROAD
MANCHESTER
Show Rooms
15 New Bailey St
SALFORD
Bradford Road
DEWSBURY
Ultoxeter New Rd
DERBY
NEWPORT MON.
and CARDIFF
11 Queen Victoria St
LONDON EC

The Barrow Rock Drill COMPANY

SUPPLY their CELEBRATED ROCK DRILLS, AIR COMPRESSORS, &c., and all NECESSARY APPLIANCES for working the said Drills.

Their DRILLS have most satisfactorily stood the TEST of LONG and CONTINUOUS WORK in the HARDEST KNOWN ROCK in numerous mines in Great Britain and other countries, clearly proving their DURABILITY and POWER.

The DRILLS are exceedingly STRONG, LIGHT, SIMPLE, and adapted for ends, stopes, quarries, and the sinking of shafts. They can be worked by any miner.

For PRICES, Particulars and Reports of Successful and Economical Working, apply to—

**LOAM AND SON,
LISKEARD, CORNWALL.**

For Excellence
and Practical Success
of Engines



Represented by
Model exhibited by
this Firm.

HARVEY AND CO.

ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL.
LONDON OFFICE,—186, GRESHAM HOUSE, E.C.

MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
of the largest and most approved kinds in use, SUGAR MACHINERY,
MILLWORK, MINING MACHINERY, AND MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

MANUFACTURERS OF
HUSBAND'S PATENT PNEUMATIC STAMPS.

SECONDHAND MINING MACHINERY FOR SALE.

IN GOOD CONDITION, AT MODERATE PRICES—viz.,

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES;
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK
of various sizes and descriptions; and all kinds of MATERIALS required for
MINING PURPOSES.

THE PHOSPHOR BRONZE COMPANY (LIMITED).



139, CANNON STREET, E.C
LONDON.

Alloy, No. II., for pinions, ornamental castings, steem fittings, &c. 110s. per cwt
" No. IV., for pinions, pumps, valves, linings, cylinders, &c. 110s. "
" No. VI. (must be cast in chill) for bolts, &c. 125s. "
This alloy has very great tensile strength
" No. VII., for hydraulic pumps, valves, and plungers, piston rings, bushes and bearings, for steel shafts 125s. "
" No. XI., special phosphor-bronze bearing metal, wearing five times as long as gun metal 105s. "
The prices of castings vary according to the pattern, the quantity required, and the alloy used.

WIRE ROPES, TUBES OF ALL DESCRIPTIONS, &c.

MR. W. F. STANLEY, MATHEMATICAL INSTRUMENT MANUFACTURER TO H.M.'S GOVERNMENT, COUNCIL OF INDIA, SCIENCE AND ART DEPARTMENT, ADMIRALTY, &c.
MATHEMATICAL, DRAWING, and SURVEYING INSTRUMENTS of every description, of the highest quality and finish, at the most moderate prices.
Price-list post free.

ENGINE DIVIDER TO THE TRADE.

ADDRESS—GREAT TURNSTILE, HOLBORN, LONDON W.C.

IMPROVED PATENT

INGERSOLL ROCK DRILL

MEDALS
AND

HIGHEST
AWARDS.

American Institute, 1872.
American Institute, 1873.
London International Exhibition, 1874.
Manchester Scientific Society, 1875.
Ieds Exhibition, 1875.
Royal Cornwall Polytechnic, 1875.

Rio de Janeiro Exhibition, 1875.
Australia Brisbane Exhibition, 1876.
Philadelphia Exhibition, 1876.
Royal Cornwall Polytechnic, 1877.
Mining Institute of Cornwall, 1877.
Paris Exhibition, 1878.

LE GROS, MAYNE, LEAVER, & CO.,

60, Queen Victoria Street, London, E.C.

SOLE AGENTS FOR THE

DUSSELDORF

WROUGHT IRON STEAM TUBE WORKS.

TUBES FOR BOILERS, PERKINS'S, and other HOT-WATER SYSTEMS.

For Catalogues of Rock Drills, Air Compressors, Steel or Iron Steam Tubes, Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, Boring Tubes, and all kinds of Machinery and Mining Plant, apply—

60, QUEEN VICTORIA STREET, E.C.

ASBESTOS.

ASBESTOS ENGINE PACKING,
ASBESTOS MILLBOARD JOINTING,
ASBESTOS BOILER COVERING,
ASBESTOS CEMENT,
ARE UNRIVALLED.

Sole Patentees and Manufacturers:

THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),

31, ST. VINCENT PLACE, GLASGOW,

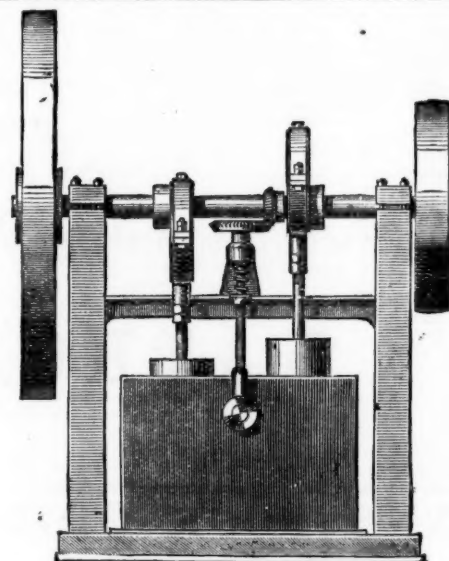
AND 10, MARSDEN STREET, MANCHESTER.

From whom Price Lists and all information can be had.

**SMITH & FORREST,
OIL REFINERS,
ROSIN OIL DISTILLERS,
GREASE AND VARNISH MANUFACTURERS,
HOLT TOWN,
MANCHESTER.**

Price List on application.

[ESTABLISHED TEN YEARS.]



NORMANDY AIR COMPRESSOR OR EXHAUSTER,

PATENT.

SILENT, VALVELESS, SIMPLE, CHEAP.
SIZES: 10 to 7500 CUBIC FEET PER MINUTE.
ANY PRESSURE.

* * See description in *Engineer*, May 16, and *Mining Journal*, May 24, 1879.

NORMANDY ROCK DRILL,

PATENT.

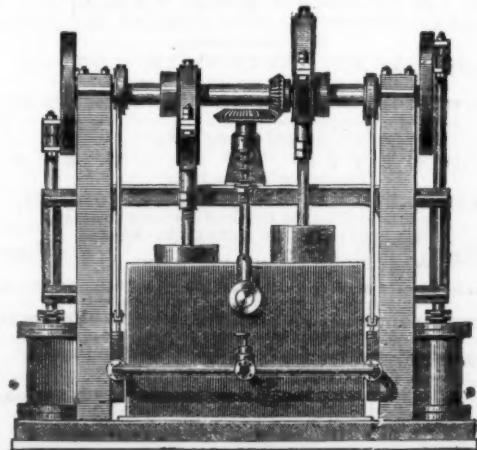
VALVELESS, SIMPLEST, CHEAPEST.
BORES HOLES 3 FEET DEEP IN EIGHT MINUTES IN HARD ROCK.

The above may be seen at work at—

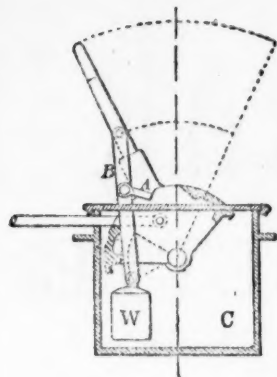
A. NORMANDY, STILWELL, & Co.

OPPOSITE CUSTOM-HOUSE STATION,

VICTORIA DOCKS, LONDON, E.

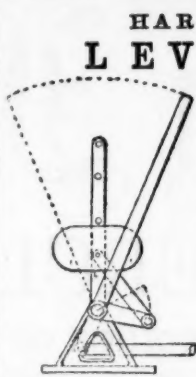


SWITCHES AND CROSSINGS, FOR RAILWAYS AND TRAMWAYS, WITH PATENT LEVER BOXES.



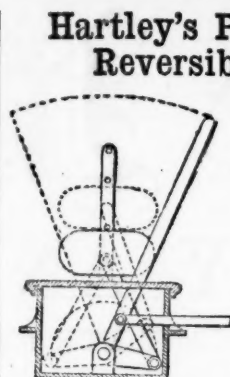
Hartley's Patent Lever
Box,
REVERSIBLE UNDERGROUND.

Can be set to work either way; by turning over the catch at A and reversing the lever, the weight W swings over to C, the catch preventing its return until again turned over. The reversing is effected with very little power, as the weight is raised but a few inches in the operation.



HARTLEY'S PATENT
LEVER BOX.

Specially designed for Colliery Workings, or where economy of space is an object. Is reversible, and can be locked either way, or dead-locked, so as not to work at all.



Hartley's Patent Locking and
Reversible Lever Boxes,

HALF UNDERGROUND,

Will set over both ways, can be locked so as to work on one side only, or the switches can be locked on either side, so as not to work at all. Takes up less room than any other, as the weight does not turn over; works equally well if full of water; can be supplied at the price of an ordinary lever box.

Tank Locomotives, Siding Stops, Wheels, Rails, Chairs, Spikes, Bolts,

AND EVERY DESCRIPTION OF PERMANENT WAY FITTINGS.

Iron and Steel Pit Cages, Wrought-iron Roofs, Headgears, Girders, Turntables, Patent Coal Tip, Boilers, Engines, Water Cranes.

HARTLEY and ARNOUX BROTHERS, Stoke-upon-Trent.

GOLD MEDAL,



PARIS, 1878.

THE COMPOUND DIFFERENTIAL PUMPING ENGINE

Is largely adopted for Mining and all Pumping purposes. It secures great economy in fuel and maintenance. H., D., and Co. have patterns for all sizes, from 5 to 500-horse power, and can supply very powerful Engines and Pumps at a short notice.

HYDRAULIC PUMPING ENGINES for all purposes where water pressure is available.

AIR-COMPRESSING MACHINERY for Rock Drilling and Underground Haulage, &c.

MINING MACHINERY OF ALL KINDS.

WINDING ENGINES, BLOWING ENGINES, CORNISH PUMPING ENGINES, PUMPS, ETC.

HATHORN, DAVEY, AND CO.,
ENGINEERS, LEEDS.

CATALOGUES ON APPLICATION.

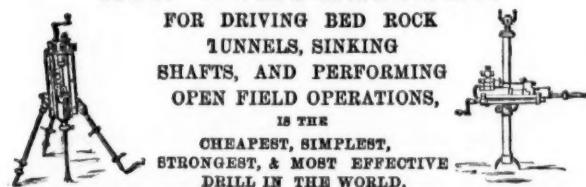
DUNN'S ROCK DRILL, AND AIR COMPRESSORS.

FOR DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS,

IS THE
CHEAPEST, SIMPLEST,
STRONGEST, & MOST EFFECTIVE
DRILL IN THE WORLD.

Dunn's Patent Rock Drill Company

(LIMITED).
OFFICE, -193, GOSWELL ROAD
LONDON, E.C.



By a special method of preparation, this leather is made solid, perfectly cross in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

HEPBURN AND GALE,
TANNERS AND CURRIERS, LEATHER MILLBAND AND HOSE PIPE
MANUFACTURERS,

LONG LANE, SOUTHWARK, LONDON

Prize Medals, 1851, 1855, 1862, for

MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES

ACCIDENTS OCCUR DAILY!!

ACCIDENTS OF ALL KINDS
Provided against by a Policy of the

RAILWAY PASSENGERS ASSURANCE COMPANY,
The Oldest and Largest Accidental Assurance Company.
The Right Hon. LORD KINNAIRD, Chairman.

SUBSCRIBED CAPITAL £1,000,000.

ANNUAL INCOME, £214,000.

A fixed sum in case of death by accident, and a weekly allowance in the event of injury, may be secured at moderate premiums.

BONDS ALLOWED TO INSURERS OF FIVE YEARS' STANDING.
£1,340,000 have been paid as compensation.

Apply to the Clerks at the Railway Stations, the Local Agents, or

64, CORNHILL, LONDON.

WILLIAM J. VIAN, Secretary.

STEVENS' PATENT UNDERGROUND WINDING ENGINE,

DESIGNED FOR USING COMPRESSED AIR OR STEAM,

SIMPLE, COMPACT, PORTABLE.

Silver Medal, Royal Cornwall Polytechnic Society, 1876.

No. 1 size, 7 in. single cylinder, with 2 ft. drums.
No. 2 size, 9 in. single cylinder, with 2 ft. 6 in. drums.

Larger sizes made with two cylinders.

A, - 6 in. double cylinder, with 2 ft. 3 in. drums.
B, - 8 in. " " 3 ft. 0 in. drums.
C, - 10 in. " " 3 ft. 6 in. drums.
D, - 12 in. " " 4 ft. 6 in. drums.

MANUFACTURED BY

THE USKSID CO.,

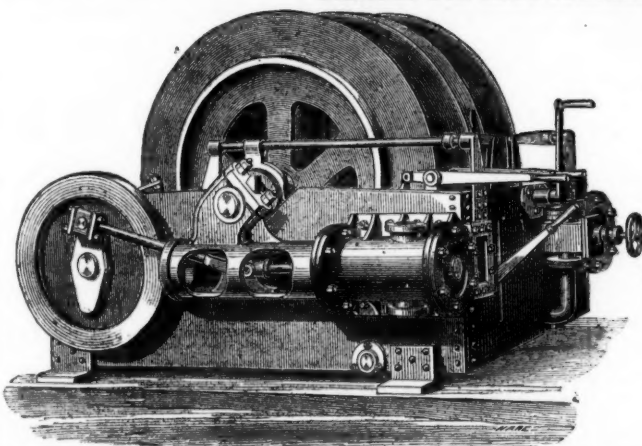
ENGINEERS, MAKERS OF PUMPING AND WINDING
MACHINERY, AND FORGINGS OF EVERY
DESCRIPTION,

NEWPORT, MON

Agents for the six Northern Counties—

TANGYE BROTHERS, ST. NICHOLAS BUILDING
NEWCASTLE-ON-TYNE.

[This Advertisement appears fortnightly.]



The "BURLEIGH" ROCK-BORING COMPANY (LIMITED),

MARKET PLACE CHAMBERS, 22, MARKET PLACE, MANCHESTER.

RICHARD MOTTRAM, Secretary.

For the Sale of the "Burleigh" Rock Boring Machinery, and also for Sinking Shafts, Cutting Tunnels and Levels, and General Rock Blasting Operations by Contract.

References permitted to—

Messrs. BOLCKOW, VAUGHAN, AND CO. (LIMITED), Middlesborough.

J. W. PEASE AND CO., Darlington.

THE DOWLAIS IRON COMPANY (LIMITED), South Wales.

THE EBBW VALE STEEL, IRON, AND COAL COMPANY (LIMITED), South Wales.

THE CRUMLIN VIADUCT WORKS COMPANY (LIMITED), South Wales.

T. T. J. WALLER, Esq., Railway Contractor, Gisburn, near Skipton.

TURNER AND SON, Limestone Quarries, Kiverton Park, near Sheffield.

THE CLIFTON AND KERSLEY COAL COMPANY, near Manchester.

THE ST. BRIDE'S WELSH SLATE AND SLAB COMPANY, Haverfordwest.

THE WARTON LAND COMPANY (LIMITED), Silverdale, near Carnforth.

THE MONTIPONI SOCIETY, Turin, Italy.

The following letter has recently been received from the Ebbw Vale Company:—

GENTLEMEN,—I have much pleasure in stating that in the execution of your contract to drive, for the Ebbw Vale Steel, Coal, and Iron Company (Limited), a cross measure Drift from the Old Coal to the Rock Vein Coal, in the Glyn Pits, at Pontypool, you did so with dispatch, and to the entire satisfaction of all concerned. The distance driven was 453 yards in about 13 months.

[The size of the above heading is 9 ft. by 13 ft.]

The "Burleigh" Machinery can be seen in operation at Manchester any time, by giving a few days' notice to the company.

Ebbw Vale Works, Monmouthshire, July 5th, 1878.

For the Ebbw Vale Steel, Coal, and Iron Company (Limited),

ROBERT JORDAN, Mining Engineer,

Ebbw Vale Company's Collieries and Mines.

Original Correspondence.

COMPRESSED AIR BLAST FOR COAL.

SIR.—It is now some years since I first suggested the employment of compressed air for removing the necessity of using explosives, yet it has never yet been tested upon a scale to make success probable, and now Mr. E. G. Reuss, of Manchester, makes a new proposal, which would seem to infer that mine is impracticable, though I am convinced that it is not so. Mr. Reuss says that it has been proposed to employ for the blasting of coal and other minerals in mines and workings the explosion of cartridges or cases charged with highly compressed air, but there frequently are difficulties in working the air compressing apparatus in the neighbourhood of the place where the explosion of the cartridge is desired to take place. The object of his invention is to facilitate the use of cartridges of the kind mentioned by combining with them means of increasing by the combustion of an explosive the pressure of their contents, so as to burst them without producing so much flame as to occasion danger even when the atmosphere of the mine or working is charged with explosive gases. For this purpose he prepares a strong cartridge, which preferably is in the form of a hollow cylinder, inserts into it a small charge of an explosive, such as gun-cotton or gunpowder, with an electric fuse, such as is employed to fire mines or torpedoes; he then charges the interior of the cartridge with air to a high degree of pressure, such for example as 5000 to 7000 lbs. on the square inch. The cartridge so prepared is inserted in a hole bored in the coal or mineral to be blasted and tamped in; an electrical current is then passed through the wires of the fuse, whereupon the explosive is ignited, producing considerable volume of gaseous matter at a high temperature, which heating the compressed air raises the pressure in the cartridge so as to burst it, and the explosion causes the disintegration of the coal or mineral. A large portion of the heat of the flame of the explosive being taken up in heating the compressed air little or no flame can escape from the cartridge on its explosion. The risk of escape of flame may be further lessened by damping the greater part of the gun-cotton where it is employed as the explosive.

Now, if an explosive be used at all, I cannot see the advantage of firing it in compressed air, which, in my opinion, would rather increase than diminish the danger, but there is no reason why the compressed air itself should not break down the coal. The cause of failure is the want of speed. Coal that will stand against 120 lbs. on the square inch applied gradually will be well blasted by 60 lbs. suddenly applied. There must be an ample reservoir containing air compressed to (say) 90 lbs. to the square inch, and means of opening instantaneous communication between such reservoir and the hole. If the coal be sound a well placed plug will suffice; if open a thin metal cylinder may be used as a cartridge. This may be closed at the outer end by a screw, so that it may be filled with water, as this will enable an extremely thin metal to be used. When the cartridge is in place the water will be let out, the air tube connected, and the air suddenly admitted, the coal will thus be broken down admirably.—Manchester, July 15.

A. LUFT.

IMPROVEMENTS IN SAFETY-LAMPS.

SIR.—In accordance with the wishes of numerous correspondents that safety-lamps should be less heavy, I have great pleasure in stating that I can turn mine out under 2 lbs. weight. This has been done by using special metals for special purposes, and so retaining ample working strength. Recently I have seen it stated in the Proceedings of the Institution of Mechanical Engineers that Sir Humphry Davy named copper wire gauze for safety-lamps. It would be interesting to know who introduced iron wire gauze as better and cheaper, for evidence is to the contrary.

J. D. SHAKESPEAR.

THE LONDON COAL SUPPLY.

SIR.—As your Journal has been the artery bringing this important subject so prominently under the observation of the producing and consuming public, I avail myself of the earliest opportunity to convey to you and your numerous readers, the Journal permeating the coal mining districts and general mining interests for such a lengthened series of years, the intelligence that there no longer exists any doubt of a company being constituted to supply London with coal, as hereinafter set forth, with a directorate commensurate with its importance. A company has been incorporated under the Companies Acts of 1862 and 1867, entitled the Seaborne and Sack-Conveyed Coal Company (Limited), the immediate object of which is the supply of the Metropolis with seaborne coal direct from the collieries, without passing through the hands of intermediate dealers, entailing a manifold enhancement of price to the consumer, as distinctly shown in the sequel, computed by the accompanying tabular statement to effect an annual saving of upwards of five million pounds sterling, based upon the official returns of import and average price for the last decennial period—1868-1877—and the actual sales recently effected of inland coal at pit mouth, with attendant expenses in both cases, to metropolitan consumers' premises, as shown in the sequel. If we take a similar return for the last fifty years—1827-1878—an augmented saving is the result, equally so if the parliamentary evidence of a leading London coal merchant, given in the sequel, be adduced as basis. The aristocratic, popular, and technical Press, in addition to the Minutes of Evidence taken before a Select Committee of the House of Commons appointed to enquire into the causes of the dearth, &c., of coal, have so exhaustively expatiated upon the immensely overstrained or excessive profits exacted from the consuming public, and the anomalous and disreputable practices of the London coal trade, that it is necessary, in order to studiously avoid prolixity, to refer very cursorily to a few such data—short weight, in one well known case to the extent of 12 tons in one barge load. The Times and the Standard of Oct. 11, 1878, published a letter headed "Organised Robbery," proving the delivery of 25 per cent. short weight of coal, dual instances afloat and ashore of London coal trade rapacity. The martyrdom the poor have to endure through the deplorable state of the coal trade defies description.

Coals advertised by numerous parties in the Times under a false name, and so delivered at a less price than the legitimate or real denomination so advertised could be purchased for at the pit-mouth, the working and less favoured classes mulcted by the coals passing through several intermediate hands, each levying a profit to the extent of 10s. to 12s. a ton more than even paid by the better classes for the coals bought of intermediate dealers, and composing predicted saving, a great deal of rubbishy (sic) class of coals sold in London at a high price for household purposes, sales having been effected at a not remote period in London at 50s. a ton, whilst the current selling price in Leeds was only a moiety, or 25s., whence the cost of the coal freight and delivery to consumers' premises in London is, as shown in the sequel, 12s. 8d. a ton, resulting in a profit to the intermediate dealer of upwards of 12s. per ton. The Registrar of the Coal Exchange—the highest official authority on the Metropolitan coal trade—stated last year, in evidence before a Parliamentary Committee, Great Eastern Railway (Northern Extension Bill) in answer to Question 4530, that advantage is taken of any opportunity to raise the price of coal to the advantage of the coal factors, owners, or merchants. The preponderating element of proposed saving is dispatch, enabling an incomparably greater number of voyages to be made in the year than hitherto, thereby reducing the working expenses to a minimum not attainable under hitherto existing or the latest improved system. The steamers—two of which, classed 100 A 1 at Lloyd's—with hull and machinery in the highest state of efficiency have been conditionally secured (with an exuberance of good steamers on the market) are of the ordinary type as far as the hulls are concerned, but five-fold the average cargo capacity of the Coal Exchange last official, 1878, return, with end-to-end hatchways, and 12 hydraulic cranes each steamer. The Transactions of the British Association, Newcastle Meeting, 1863, show that, in point of dispatch, the hydraulic or any other system is limited by the space available in the hold of the vessel for the men to work—the vastly increased size of these ves-

sels, with increased number of hatchways and cranes enabling eight-fold the number of men to be employed—thus securing the grand desideratum dispatch, far surpassing the maximum attainable at the Derrick, or at Victoria Dock, Beckton, and other wharves, restricted to the employment of two cranes for steamers, as can be seen in the latest constructed hydraulic system in operation for discharging coal at steamer at the London Gasworks, exceptionally three cranes.

As to loading, the dispatch is also immeasurably greater by the proposed system, in strict harmony with the evidence of the senior Thames Conservancy harbour master before the Thames Traffic Committee on March 3 last, whose answers to questions 10,364, 10,365, 10,367, and 10,368 confirm the immense advantages of the proposed system. We cannot do better than quote his answer to 10,364—"The vessels loading and discharging in the river could not do their work in the docks;" 10,365—"For instance, a ship will come up to-day, have all her barges lying ready for her, she will discharge and load, and be away to-morrow, which you cannot do in the dock;" 10,366—"They could not get in and out of dock;" 10,367—"They do not work at night in the docks;" 10,368—"which is done in the tiers in the Thames." This is exactly our *modus operandi* and plea for attaining infinitely greater dispatch than under hitherto existing or latest improved system.

In the Tyne, Wear, Seaham, and the Hartlepoons, where an immense capital has been laid out in docks by the railway company, &c., and where the steamers supplying London with coal load, a diametrically opposite course is pursued, entailing very great detention, any trifling isolated exception to the contrary not deserving notice. The Inspector-General in the outdoor department of the Customs in the port of London, and the Assistant Surveyor of Customs on Jan. 27 last gave evidence that if the system pursued in the shipment of coal was pursued in London by shippers it would stop the trade of the port. The steamers will load from and discharge day and night into diked lighters in the stream in the Humber and Orwell, both accessible at all states of tide, in all weathers by day or night, which is done in the case of merchandise cargoes in both rivers, studiously eschewing the immense delay incidental to docks, all coastwise, North Sea, fruit, &c., steamers with passengers and cargo requiring dispatch discharge in the stream in the Thames. An exuberance of time is allowed for overhauling, repairs, and contingencies. Immunity from breakage by conveyance in corded sacks of the Admiralty type, well known to be made much stronger and more durable than those in use by the London coal merchants, and more costly. The immense breakage incidental to tender and brittle Welsh coals lessens so considerably the market value "that an Admiralty report ordered by Parliament to be printed states that the average quantity of coal dust obtained from passing four descriptions of coal through $\frac{1}{2}$ -inch screen amounts to more than one-fourth of the whole weight, a considerable portion being thrown overboard, having been turned to no account in the production of steam. Were the space occupied by this useless refuse (sic) filled up with good coal the vessel would be enabled to keep at sea much longer. The engines are subjected to serious injury from the coal dust, and great extra labour is occasioned in stoking, and great difficulty in keeping up steam. Welsh coals ought never to be screened, on account of their very brittle nature, but hand picked, quite in harmony with the system proposed. They have been found to deteriorate in quality more rapidly than North Country coal."

A printed circular disseminated by the leading Welsh coalowners states:—"It is a general complaint that the small from the mixed seams of Welsh coal will not bind, but falls through the bars to waste, being one of the greatest objections to South Wales smokeless coal." The loss by breakage entering into our calculations is based upon the evidence of two leading metropolitan coal merchants before a Parliamentary Committee on household coal. By adapting the Admiralty report to the supply of steamers from the Thames via the Cape, Suez, &c., it will be evident by the appended tabular statements that the undertaking is in a position to realise a sum to steamship owners of more than the entire cost of the coal, with transport and all other expenses, delivered into the bunkers in the docks and in the Thames, by reduced cost of transport and attendant expenses, and perfect immunity from small or dust by breakage. A tabular statement circulated by the leading Welsh coalowners, wherein they show forth the comparative value of the Welsh and North Country coal, is reversed by the system proposed of delivering excellent steam coal from the Humber in sacks into the bunkers of steamers, which also points out a brilliant future for Yorkshire steam coal.

The following tabular statement shows a saving effected by this undertaking of 11s. 4d. a ton on the average annual current selling price for similar descriptions of coal in London, and 15s. 2d. for a decennial period:—

Average annual London selling price per ton	24s. 0d.
Sales effected of Silkstone house coal at pits, vide Engineer, Engineering, and Iron, May 30 and 31 last	5s. 0d.
Transport and attendant expenses from pit-mouth to London consumers' premises, as stated below	7 8 = 12 8

Saving per ton

Canal and Humber lighterage	1 7
Sea freight	0 8½
Labourage	1 6
Sacks	0 2
Management	0 2
City dues	1 1
Total	5 8

The average decennial price at the ships' side has been 20s. 11d., to which must be added—Lighterage, 1s.; landing, 11d.; breakage, 12 to 16 per cent. per Mr. Cockerell's Parliamentary evidence—say, 12 per cent. per Mr. Cory's ditto, 2s. 10½d.; cartage, 2s.; sacks, 2d.—6s. 11½d.; making 27s. 10½d., whilst the cost by this undertaking, as above, is 12s. 8d., showing a saving per ton of 15s. 2½d.

Per ton.	Per ton.
Canal and Humber lighterage	1 7
Sea freight	0 8½
Labourage	1 6
Sacks	0 2
Management	0 2
City dues	1 1
Total	5 8
Interest, 5 per cent.	0 5½
Dividend, 10 per cent.	0 6½
Total	1 0½

As applicable in comparison with Tyne shipment, 4s. 1d. Total

Insurance, repairs, redemption of steamer, 15 per cent. on 38,000 £	5,700
Insurance, sacks, 8 per cent.	2,340
Portcharges, London ..	702
Lights	560
Hull, dock dues	4,750
Harwich	160
Fuel	3,150
Wages	3,438
Engines, stores, &c.	360
Total	£21,250

Saving in mere transport and attendant expenses to consumers' premises on rail transit, 6s. 3d. from pit's mouth; Tyne transit, 7s. 3d. from Tyne and Humber.

Per ton.	Per ton.
Canal and Humber lighterage	1 7
Sea freight	0 8½
Labourage	1 6
Sacks	0 2
Management	0 2
City dues	1 1
Total	5 8
Interest, 5 per cent.	0 5½
Dividend, 10 per cent.	0 6½
Total	1 0½

Wages—steam-ship. Per annum.	Steward, 30s. per week ...	78
Captain, 3l. per week	One boy, 20s.	52
Trip money, 42s. per voyage, apportioned to scale of 50 voyages	Contingencies	195
Mate, 50s. per week	Total	£3433
Trip money, 20s.	34 all told.	

Wages—tugs. Per annum.	Wages of men to load and discharge, in constant employment, at 5s. per day.
Lamps, 2s. 6d. per week	Further details will be embodied in a prospectus, to be issued hereafter. The managing director, Mr. William Joseph Thompson, is dependent on the successful working of the company for his annual remuneration, by means of a commission on net profits, all preliminary expenses being covered by 2½ per cent. on the aforesaid capital, no payment in either case being made before the distribution of a dividend of 10 per cent. to each shareholder out of the net profit.—Little Tower-street, July 16.
Third mate, 35s. per week	W. J. THOMPSON.
Carpenter, 40s. per week	
12 sailors, 30s. week	
Engineer, 4l. per week	
Second engineer, 3l. p. wk.	
Third engineer, 50s. p. wk.	
12 firemen, 30s. per week	
Total	£400

Wages of lighterman, 36s. per week. Wages of men to load and discharge, in constant employment, at 5s. per day.

Further details will be embodied in a prospectus, to be issued hereafter. The managing director, Mr. William Joseph Thompson, is dependent on the successful working of the company for his annual remuneration, by means of a commission on net profits, all preliminary expenses being covered by 2½ per cent. on the aforesaid capital, no payment in either case being made before the distribution of a dividend of 10 per cent. to each shareholder out of the net profit.—Little Tower-street, July 16.

BEAUMONT DRILLS.

SIR.—In Saturday's Journal Colonel Beaumont gives the distances driven with his machines at Lees Moor and Halkyn Tunnels during last week, and in the closing paragraph of his letter he briefly insinuates how mining interests may be promoted in these wretchedly bad times. The old system of development is as far behind that introduced by mechanical boring as travelling by stage coach of old days and the railway of the present, but I very much doubt if the maximum speed that machines are capable of performing has yet been reached by Colonel Beaumont, and that 34 yards per week will not be considered anything very extraordinary when everything is taken into account. From personal knowledge of the rock formation in the neighbourhood of Keighley I can state that it is extremely favourable for progress, and that of the Halkyn Tunnel, though consisting of mountain limestone, is not more troublesome for boring and blasting than the tough, knotty, silicious slate in some of our metalliferous mines. I think Colonel Beaumont's experience at Carn Brea Mines, Cornwall, where the utmost speed made was but 40 yards per month by the identical machines he champions, shows that a great deal depends on the nature of the rock. The fact is many of the boring machines now before the public will do splendid duty at Royal Agricultural shows, on rocks specially selected for their free cutting properties, which when applied to the ever-changing conditions of underground boring are utterly worthless. I do not class the Beaumont drills with this lot, because their capabilities for penetrating all kinds of rock have been proved, but I wish to point out that a rapid rate of progress is not solely dependant on the drill, no matter how perfectly it fulfils the conditions necessary to efficient boring.—1. The value of time must be thoroughly understood by the men in charge of the machine, and also by blasters and muck shifters. This lesson has been well learnt by Colonel Beaumont's men, so much so that they do not scruple to trespass on the Sabbath, their permanent way and turnouts, I understand, being fixed on that day, during the very few hours that there is a cessation of boring operations, so that really to other people's six days they have seven.—2. It is equally important that the work should be thoroughly organised. We are indebted to our continental neighbours for a few wrinkles on this score, only we are not honest and candid enough to say so. They were the first to show that a systematic arrangement of the men and the work was an absolute necessity to secure and maintain a high rate of speed. We have simply applied with slight modifications the system pursued at St. Gothard and elsewhere, with the results Colonel Beaumont mentions. Economy is an unknown word in their vocabulary; everything must be made subservient to speed, hence as many men as can "stick in" are employed. We give Col. Beaumont all the credit possible for what he has accomplished at Lees Moor and elsewhere, but in many, if not in all, of our home mines we must do the work of development in a cheaper way. A few months of the enormous expenditure incurred at either of the places he names would swamp the majority of our mines. If boring machinery is to be generally adopted we must compete with hand in price as well as speed. Is Colonel Beaumont doing this? Will he be good enough to furnish the actual cost per yard inclusive at Lees Moor or Halkyn? We can then form an opinion as to whether the "opening of ground at such speeds are of the highest importance to mining.—July 15. PRO BONO PUBLICO.

ROCK DRILLS—SPEED OF PROGRESS.

SIR.—As the use of rock-drilling and air-compressing machinery is now becoming a recognised necessity in connection with mining enterprise, and as quarry owners, mining managers, and directors are alike anxious to obtain the fullest information as to the efficiency of the several machines, it may interest the readers of the Mining Journal to know that one of my hand-rotating steam drills has put down in a 12 months' run over 18,000 ft. of 24 ft. diameter blast holes at the Tremdon Grange Limestone Quarries Company, Durham. They have been employed at these quarries for the last five years, having drilled in this time over 85,000 ft. of blast holes. This work is now being done at less than one-fifth the cost of hand labour. The Eberhardt and Aurora Mining Company, Nevada, have driven their tunnel and incline over 4830 linear feet with my compressors and rock drills. The tunnel, measure 7 x 9 ft. at the face, having been driven 280 linear feet in one month in hard black limestone, with two machines working simultaneously. As evidence of their local utility, several machines are at present being put to work in different mines in the counties of Northumberland and Durham.—Newcastle-on-Tyne, July 17. JOHN GREY CRANSTON.

ROCK-DRILLING MACHINERY.

SIR.—Your well known reputation for informing the public upon all points of interest to them seems to us to be badly appreciated by some of your readers who ought to be thankful; for in the Journal of July 5 you were good enough to notice the different classes of machinery at the Kilburn Exhibition, and amongst them our Eclipse Drill and Reliance Air Compressor, for which we tender you our thanks, but in doing so you seem to have somewhat annoyed Messrs. Le Gros, Mayne, Leaver, and Co. by calling the Eclipse a modification of the Ingersoll Drill, and by stating that it is in the same hands in America. Messrs. Le Gros have undertaken to correct you, with a view, as they state, of not allowing the public to be misled; but they do so by statements that are anything but true. If they are desirous of having the facts laid before the public we can supply them. Although we had no desire to stir up these matters, we are well aware in which way the shoe pinches. Our Eclipse Drill is making great strides in the commercial world, and also amongst the former customers of the Ingersoll, and we are sorry to observe such jealousy on the part of the proprietors of the Ingersoll in showing themselves so annoyed at your noticing the Eclipse at the same time as their machine. In our own defence, then, we are bound to say that the Eclipse Drill is totally unlike the Ingersoll or any other, and we shall always take care to defend ourselves against any statements to the contrary. Messrs. Le Gros's statement about Mr. Crease's Drill is incorrect, and that gentleman has recently called upon us asking us to take his invention up, which we declined to do. As to the assertion that the Eclipse is a copy of Edwards' Drill, we think you will agree with us that we have disposed of that question in a correspondence at an earlier period. The Patent Office specifications will show the difference to anyone consulting them. Their statement that the Eclipse is similar to their patent is also incorrect, as they are also when they say they gave us notice that it was an infringement, what they did do being to send us

notice that we were not to use the feed motion of an invention called the Converse patent, for which they paid Mr. Elliott, of New York, 50%, he having previously abandoned this notion for our present one, which is totally unlike the Converse, or any other. The above invention was sold to Messrs. Le Gros with our consent, as we had the control of it for all Europe. We will content ourselves with the above explanations for the present upon this matter, our object being neither to criticize or speak disparagingly of others, but to work harmoniously with all our rivals. But when untrue statements are put forth then, and only then, shall we feel it incumbent on us to defend ourselves in the eyes of the public, and to protect in every way our interests in business. So far as the machines are concerned, we are perfectly satisfied that we can hold our own against all comers in fair competition.

July 16.

HATHORN AND CO.

ECONOMIC HOLES FOR BLASTING.

SIR,—The proposition made by Mr. Edward Jones, of Caerphilly, and noticed at length in last week's Journal, is one which has been clearly established by Pittar. This gentleman specified an invention entitled "Mineral and Rock Drilling Apparatus," on Jan. 30, 1868, No. 116. One of the devices therein described and illustrated is that of a long hollow cylinder, a piston and rod, and a turbine. The piston rod passes through and forms the axis of the turbine. To keep the tool in contact with the bottom of the hole, and to remove the rock, a pressure of water is applied to the back of the piston within the long cylinder. In Pittar's apparatus the cylinder is sufficiently long to allow of a run in the hole of about 2 ft.

The simplicity of Pittar's apparatus is not to be surpassed, but it is exceedingly doubtful whether men could be found to use it as a mere hand borer, especially if physical pressure has to be employed to keep the drill to its work. In America Pittar's method of keeping the tool to its work was adopted by one of the Diamond Boring companies, with the usual statement that the invention was indigenous to that country.

ELECTRIC BLASTING.

SIR,—The experiments in electric blasting recently conducted at the Crick Quarries, near Ambergate, were by no means unique or striking in their character. The 600 and 700 tons of stone broken were mainly due to deep and large shot-holes placed behind an open face of rock, and to the use of a comparatively large quantity of dynamite—3½ lbs. per hole. To blast seven holes simultaneously is a far less number than is daily fired in many mines underground in mud and water, and beset by every disagreeable difficulty. With an ordinary double frictional machine and good tension fuses from 20 to 30 holes may be fired together, or fully three times the number fired at Crick. The quantity of stuff removed by means of seven charges, or 24½ lbs. of dynamite, may be reckoned at 30 per cent. less than that which would have been dislodged by the use of titanite—a compound in which nitro-glycerine is absorbed into an explosive, and not into an unexplosive, base. The price of this titanite in Belgium and Germany is about 1s. 3d. per lb., or 9d. less per lb. than the cost of dynamite.

It is open to anyone to manufacture and vend in this country an explosive consisting of nitro-glycerine mixed with or absorbed in an explosive base, inasmuch as Nobel's patent for "nitro-glycerine incorporated with blasting powder or other analogous substances," taken out in 1863, lapsed in 1866.

SOMBRERO.

CORNISH MINE MANAGERS—DIALLING.

SIR,—I have carefully read the communication of "I. L." upon this subject, and am ready to admit that by the old-fashioned and roundabout way in which he goes to work he would sometimes get his shaft, B, in the right place, but only sometimes. A modern surveyor would, I will undertake to say, find the point B with greater accuracy and in one-fourth the time that would be necessary by the method of "I. L." By the question put it appears that it is—"Required to drive in a stake 46 fms. 2 ft. from the point A in the direction 6° south of east. The sight, A to B, is obstructed, but the lines A to C and C to B can be sighted and measured." A modern surveyor would have taken the bearing of the line A to C, which "I. L." seems to have considered unnecessary; but then knowing the length of the line A C, and the angles C A B and A C B the point B would be found by one simple calculation not requiring 10 seconds to make. In one place "I. L." states that he is merely feeling his way, and it certainly appears that he gropes a long while in the dark before the smallest ray of light rewards his efforts.

July 14.

TARGON.

DIALLING.

SIR,—I had no idea until I read your correspondent "I. L.'s" letter on the above subject, in last week's Journal, that the present Cornish agent was so lamentably ignorant of such a simple art. This ignorance is the more unpardonable because there are several good books published treating on the very subject in such a simple manner that "a wayfaring man though a fool need not err therein." In the last Supplement to Dr. Ure's Dictionary, edited by Mr. R. Hunt, Keeper of Mining Records, there is a clear concise article on dialling and plotting by a mine agent, setting forth the whole thing so simply that a man that never saw a dial, if he reads it carefully through, could take hold of the instrument, and conduct subterranean or other surveys without any liability of error. "I. L.'s" letter is open to criticism, but it is so well meant that I forbear to do so.—*Isle of Man, July 15.*

B. J.

SEPARATION OF METALS FROM THEIR ORES.

SIR,—Several economic arrangements—the separation of metals from their ores—have been from time to time referred to as in use in Germany, and giving good results, yet I have not noticed their adoption in our own mines where economy is quite as necessary. At the Exhibition of 1862 there was in the Hungarian Court a fine display of dressing apparatus, invented, I believe, by Mr. P. Rittinger or Mr. P. Tunner, and I recollect that Mr. John Darlington said these machines worked well in Hungary. I tried to obtain a description of them in the Hungarian language, but could only get one in the Hungarian language, which not every Cornishman can understand. The models looked well, but I could learn nothing about them, and I suppose all other English mining visitors were equally unable to do so. There is now another German invention which is said to be valuable—that of Mr. V. Neukirsch, M.E., of Reichenstein, in Silesia—but although I have read his specification I cannot exactly comprehend whether the process is chemical or mechanical—that is to say, I do not know which he relies upon for effecting the separation. He states that the solvent or dissolving fluid is continually flowing down from an upper reservoir through a pipe with stop cock to the lower end of an annular chest, and rises in this chest with such a regulated velocity that the crushed ores or alloys from which the metal has to be separated (and which are supplied to the ore chest by a hopper) are prevented sinking. On the upper edge of the chest an overflow pipe is applied, with its mouth turned downwards into and beneath the level of the liquid contained in the chest sufficiently far to prevent any swimming or undissolved particles from overflowing through such pipe. The fluid discharged through the overflow pipe is raised again by means of a pump or other equivalent apparatus into the reservoir. The process of dissolving being finished, the stop cock is turned so as to close the communication between the reservoir and the ore chest, and to open a communication between the latter and a water basin on the same level as the reservoir; at the same time the stop cock is opened so that the fluid may discharge through the pipe.

The position of the plug of the stop cock is by experience so determined that its area of opening into the pipe is so diminished that the water coming from the water basin may not be all discharged through the pipe below the chest, but part of it rises into the chest. Now, the velocity of the rising liquid not being sufficient to balance or float the swimming molecules of the residuum, such molecules become precipitated and thrown away by the discharging water, and the solution being of lower specific gravity is retained in the chest. During this process the cock on the pipe on the chest is opened, and

part of the solution about equal to the quantity of water injected into the chest is drawn off for the further manipulation of separating the metal from it. The undissolved residuum being discharged out of the chest, the plug of the stop cock is turned at right angles, and two other cocks are closed. Now, from the hopper a fresh supply of ores is admitted into the chest, and the operation hereinbefore described is repeated.

What I should particularly wish to know is whether the metal is obtained by precipitation or by filtration. The precipitation of swimming molecules is scarcely a chemical operation, and as the solution is said to be of lower specific gravity than the swimming molecules precipitate, it is difficult to comprehend how the latter can pass through the water and be thrown away, whilst the former remains in the chest. The question naturally occurs—Has the description of the invention been accurately translated, and if not, what will be the effect upon the patent?

BERGMANN.

July 15.

CANADIAN MINING NOTES—No. XXVI.

SIR,—The extent of territory and the number of subjects which fall to the lot of these "Notes" to mention can only be bounded by the extent of Canada. All things that belong to the material welfare of the people fall within them. We have small capital and great resources, and anything which increases the capital must ultimately have the effect of encouraging the development of the resources. It is for this reason that I have not confined myself strictly to mining, but have endeavoured to make my letters interesting, and to give your readers a more extended knowledge of the country—to make them, in fact, interested in Canada.

The Ontario elections, which were held on June 5, resulted in a majority for the present Government, so that at the present time we have a Grit Government in Ontario, and a sort of Rouge Government in Quebec, while the Government of the Dominion is Conservative, with Sir John A. Macdonald at its head. In Manitoba they are having a crisis between the French and English parties. Our provinces, though so large, are chiefly governed by men who are elected from local issues. Both parties in the Ontario election tried to draw in Dominion politics—the Conservative party attempting to ride into power on the expressed opinion of the people on Sept. 17 last with regard to the National policy, the Grit party repudiating the National policy, and saying that it had nothing to do with provincial Government. The latter were right in this respect, but the moment that the elections were over the Globe, with its natural inconsistency, claimed that the result was an index of the feelings of the people with regard to the National policy. However, the real cause of the result was not the National policy, either for or against, but it was the action of the Ecclesiastical authorities of the Roman Catholic Church. The two parties were working hard and working amicably to impress their political views over the mass of the voters, when a third power steps in, and, without regard to politics, carries the election in favour of the Hon. Christopher Fraser and his friends in the Government.

The career of Mr. Fraser is not unlike that of Cardinal Wolsey on a small scale. Born at Brockville, on the St. Lawrence, of humble parentage, he entered the Brockville Recorder printing office at an early age—his talents were brought under the notice of some Roman Catholics of means, and he was educated at Regiopolis College, in the City of Kingston. It was expected that he would become a priest, but he entered the office of the Hon. Albert Richards and became a lawyer. That his exertions for the benefit of the Roman Catholics have tended to their material advancement to a greater degree than if he had taken the priestly profession few will be apt to deny. He was elected as a member of the local Legislature for Ontario about six years ago, obtaining his seat as a representative for the Grit interest. He became Minister of Public Works of the province of Ontario, and has for the last two years taken a prominent position as a member of the Government. To-day he is almost the dictator of Ontario, as the Government are perfectly aware their success depended upon the Roman Catholic vote. It is a great pity that the political condition of a country should be subject to the aggrandisement of any religious party. History only repeats itself when we find bishops and priests of the Church of Rome becoming political partisans. The Roman Catholics are as well treated here as any other denomination, and what religion has to do with politics it is difficult to say. Mr. Fraser deserves great credit for raising himself to his present position, but the history of Wolsey may be studied by him with advantage. His cabul of priests have only to arouse the energies of the Protestants by some act of domineering, and his fall is as certain, as just, and as speedy as that of Wolsey himself. His position is a difficult one. The party of priests who have put him in power will urge him on; the school questions, the Orange Incorporation Bills, and many others will have to be handled. He may overstep the mark and rouse the dormant energies of the Protestants, and then comes his fall—

"I have ventured,
Like little wanton boys that swim on bladders,
This many summers in a sea of glory;
But far beyond my depth; my high blown pride
At length broke under me; and now has left me
Weary and old with service."

Time will tell whether these will be his words, or whether he will have power to curb the restless aggrandisement of his priestly party. But the strangest part of Canadian politics is the manner in which the Roman Catholic vote is used in different parts of the Dominion. In Quebec, for the most part the Roman Catholics like not the Rouges, and join the Conservative party. In Ontario they have gone over hand and foot to the Grits, yet in the Dominion Government the Rouges and Grits are the one party. All is grist that comes to their mill, and they care not for parties as long as they can control those who have the substantial government. The chief use of their politics is the aggrandisement of their Church. It is a pity that it should be so; it is a pity they would not allow their flocks to use their own judgment, and even for their own welfare it would be better not to excite those religious questions which are nearly dead in Canada. No one after the Ontario elections of June 5 will be apt to claim that the principles of the Papists are dead, but are as active as before.

The Government at the present time is composed of the following men:—Hon. O. Mowat, Premier of Ontario; Hon. Christopher Fraser, Minister of Public Works; Hon. Adam Crooks, Minister of Education; Hon. T. B. Pardu, Commissioner of Crown Lands; Hon. S. C. Wood, Provincial Treasurer; Hon. H. S. Hardy, Provincial Secretary. The new Government have a lease of office now for four years. They enter with an increased majority in their favour, and if they put their hands and their brains to the work, and that out of Dominion politics, they may be able to do good work. The province is enlarged by the award, and extends to James's Bay on the north and Kewatin on the west. What a glorious country for men to work with. As large as Great Britain and Ireland, abounding in resources, in mines of gold and silver, of lead and copper, of iron and phosphate; in timber, oak, pine, and elm; in gigantic water powers and unrivalled agricultural facilities, while a healthy climate sheds its blessing over all. Is it not enough to arouse the patriotism of men who have one touch of feeling left in their hearts? This great province should develop in four years under good government with amazing rapidity, and the year 1883 ought to see Ontario a region of unexampled prosperity. We have our mines to open, our water power to utilise, and our western portion to develop.

Now for the Mines. What ought a good Government to do? In the first place they should take example from Sweden and Germany. The mines in those countries have been worked by the Government for many years, and have produced great wealth. At present our revenue depends in a great measure on our timber limits and timber licenses, but each year must see a difference, and unless we take some means to develop our other resources direct taxation will become necessary. At present we have a surplus of over \$4,000,000. If \$1,000,000 of that surplus were expended in developing the mines and opening them up so that capitalists could see their way to invest, the licenses from the mines would bring in as good a revenue as the licenses from the timber limits, the difference being that the opportunity for producing revenue in the latter case is always decreasing, while in the former it would be always increasing. Mr. Pardu is advised to study up the history of mines in other countries, or to change places with some member of the Government who has more

energy. There is no reason why our mines should remain without being worked, and there is no reason why the Government of the country should not use the surplus capital to develop the mines, and when opened institute a system of licenses on the working.

The Minister of Education might help to develop the country by appointing a paid assayer in the School of Practical Science, so that anyone might send in pieces of ore for assay free of charge. Thus, the whole of Ontario would become analysed, and we should be able to ascertain what wealth the country really possessed. But I am afraid all these suggestions may fall on hard and stony ground. The Grits have got into power, and if they carry out their principles of reform and progress they have no better opportunity of earning the blessings of a people, but I fear their promises are like pie crust, and their highest ambition—to do as little work and take as many trips to Europe as their four years of office will allow.

Toronto, June 20.

BOURNONITE.

ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY.

SIR,—I should be obliged by you allowing me to amplify a little one of the paragraphs in the report of this company's general meeting on the 4th inst. Mr. Clemes has reported to us a profit for January of about 2200, and for February and March of about 1800. The interest on debentures, pay to miners' families, and London expenses for these three months is about 1000, so that the net profit in the same period is about 1000.

J. A. MORGAN.

Finsbury-circus, July 14.

Solicitor and General Manager.

INDICATIONS OF A REVIVAL IN TRADE.

SIR,—I am pleased to be able to confirm my letter of the 5th inst. to you on the subject of Sheffield Pig-Iron and other matters, tending to show that we have passed the deepest point of the depression, and that investors should now step in and purchase freely in the best local stocks, and so give that fillip to the tone of the stock markets so much wanted. Take this extract from the Sheffield and Rotherham Independent of to-day (the 12th):—

In local stocks the depression continues, only it is worse. Prices are now very low, and perhaps it may be as well to recollect that, just as a few years ago, when prices were, as the result has shown, very inflated so now, in a few years time we shall probably look back upon this time as one of undue depression.

And then read the following:—

SHEFFIELD, FRIDAY.—There can hardly be any doubt that a change for the better has at last begun—at all events in some few branches. There are many indications pointing in that direction. One of the most recent is that a third furnace has just been added to the two previously at work at John Brown and Co.'s, and another cheering fact is that the armour-plate mill there is busily employed. At the Parkgate Ironworks there is a good demand for ship and boiler plates, bar and general merchant iron, and pretty constant employment is given to about 600 workmen. Considering the general depression, this is a very satisfactory state of things.

LEEDS, FRIDAY.—There is an improvement to be noticed in the best Yorkshire iron trade during the past week. A few orders have been placed, and the enquiries of the locomotive and marine engineers are more numerous. One of the Indian Railway Companies is in the market for plates, sheets, &c., and the State Railways require 23 locomotives and tenders.

I believe it is an open secret that in the case of the Parkgate Company's people, knowing the improved state of affairs, including directors, brokers, &c., have quietly added to their holdings. Considering what must accrue with better trade, better prices, and the smelting of the 7000 tons weekly of local pig mentioned by "B" in his now celebrated letter, it is to be seen that considerable profits are to be made by a sound English investment. After so much waiting about bad times, it is positively a pleasure to write on an amended state of affairs, and give a hand, however feeble, to congratulate better times.

AN OBSERVER.

THE CONTROVERSY ABOUT THE RIGHTNESS OR OTHERWISE OF PAYING PURCHASE-MONEY FOR MINES, AND WHETHER MINES ARE APPRAISEABLE.

SIR,—I have observed with much interest the controversy that has been going on in the Journal for some time past as to whether it is right to pay purchase-money for mines, and some collateral points, such as dues, royalties, &c. I was astonished that any sane men of business should doubt the wisdom or rightness of paying money for mineral property, or, indeed, for property of any kind, whereby good returns for investment can be secured. If it is wrong to buy a mine or a given acreage of mineral property, would it not follow that paying for property is wrong? But what right can anyone have in any property unless he has received it by inheritance, purchase, or gift? True, if an owner chose to agree with a second party that he should have the privilege or right of developing a mine by paying a royalty of so much per ton upon the ore or coal, as the case might be, instead of a lump sum down, the arrangement would be legitimate and just, if proposed and carried out in a straightforward manner, whether a royalty should be paid on the tonnage of mineral in addition or not. But, whether the consideration be simply in a lump sum or not, or paid only by way of royalty, either way it would be purchasing, but with this difference—paying by royalty is purchasing by piecemeal, or in dribbles, whereas a lump sum completes the purchase upon payment and signing the legal instruments. But, whichever method is adopted, there is what is esteemed a *quid pro quo*—an equivalent rendered for the privilege or property secured. It appeared to me, therefore, that the correspondent who first mooted the question—"Is it right to pay purchase-money for mines?"—was muddled, or altogether in a mist, as to what was right or wrong in the matter so far as principle was concerned. The confusion of ideas seems to have been as great as the confusion of persons or writers, for after the searching and literary probing of Mr. Hoskold it turned out that several names as correspondents and participants in the controversy only represented one writer! As to the valuation of mines, M. A. Leon reproaches Englishmen for being ignorant of the one work on the subject yet published in this country. I hardly think my countrymen deserve so severe a rebuke as that which the esteemed French engineer administered in his interesting letter, which appeared in the *Mining Journal* on July 5. I believe the book he referred to was composed or written by Mr. Hoskold, but as I have not seen it I am unable to quote its title, publisher, or price. Has it been advertised or reviewed? I have seen no such advertisement or review, and until its author or publisher has used means to bring it before the public I think it is unfair to censure those who may be ignorant of its existence through no fault of their own. The principle of the book on valuing a mine I understood to be this—Given a sample mine in any district where the geological structure and strata have been ascertained, and the quantity and value of the mineral raised per acre have also been ascertained, and then proceed to draw conclusions as to the value of any acreage of mineral of similar quality, so that an approximate value may be arrived at. However, as I have not seen the book itself, I forbear to write further on the subject lest I should do the author an unintentional injustice.

West Gloucester, July 16.

LOOKER ON.

PURCHASE OF MINES.

SIR,—I have seen in the *Mining Journal* numerous letters on the question "Is it right to pay purchase money for mines?" I have wondered how anyone should have asked such a question, because it must be obvious I should suppose to everyone that if a mine is a valuable property in sight it is right that the proprietor if he wishes to sell, and can find a purchaser, should have a consideration for it. It is a subject of commerce, but whether the purchase will be found advantageous or not can be determined only by development of the property. As all mining is more or less a speculative industry, it is impossible to fix a price upon a mine as you can upon a house or a farm. Minerals are hidden; you cannot see through the rock, and indications are sometimes misleading. In mines where the lode or lodes are largely developed and productive you can more safely invest. In such mines as Dolcoath, South Condurow, Wheal Pevor, South Frances, and similar ones you cannot invest at current prices without fear of loss. There are some mines offered to the public concerning which to the question proposed I would say "No." Every intending purchaser should know the mine intimately before he bargains for the purchase. If he is not a miner himself, or has no knowledge of mineral veins, he should employ an honest mine agent to report on it, and

even then in speculative mines he may err. In the case of coal mines there is, of course, more certainty than in metallic mines.
Truro, July 16. R. SYMONS.

"FUTURE PROMISES."

SIR,—There should be a method in all madness to tolerate freedom of action, whether the idiosyncrasies spring from delirium of brain, or subversion and perversion of conduct, one thing is certain and necessary in the comity of nations as amongst individuals—namely, unity of action, with freedom from coercion or combination of strength to crush a weak minority into acting contrary to individual principles or convictions and whenever practical should under all circumstances be discountenanced and condemned. The contentions between capital and labour have reduced workpeople to almost hopeless despair, and ruined one full moiety of masters employed in mining manufacture and constructive enterprise, while the capacity of the remaining moiety is reduced to a mere semblance of that power and *esprit* which characterised the industrial pursuits of the nation only some six or seven years ago. In the face of the accumulated disturbing elements associated with industries, trade, and commerce, it is satisfactory to observe that a silent yet significant wave of advancing prosperity is apparent in most descriptions of speculative enterprise. Metallic mining, but for the low prices of lead, copper, and tin, which stand depreciated far below their normal value, dividends from such mines as Wheal Pevor, South Condurrow, Wheal Eliza, Dolcoath, South Caradon, Mellanear, South Tolgus, Van, Great Laxey, Minera, Grogwinion, and others would not only be substantial but exceptionally large in comparison with all other mediums open to public selection. Again, the discoveries made at Greytown, Lezant, at Cefn-y-Maes, a lead mine standing to the southeast of Lead Era, and in close proximity, having Bodidris to the west, added to the encouraging promises of Lead Era itself, all betoken that there is no decline in the yield of mineral wealth contained in the hidden chambers of the earth wherever operations be carried out with economy and practical skill. Crebor bears more than ordinary promises of increasing yield and early gains, while shares are a good investment at ruling quotations. Bwlch United is in a satisfactory position both financially and in respect to future yield of silver-lead ores. There is at least 10,000,000 worth of ores developed in the unwrought ground above the 70 fms. level, while the extension of the Goginan deep adit up to the boundary proved that profitable mineral ground exists for 50 fms. further in depth. The erection of a new 50-ft. by 4-ft. breast water-wheel will surmount all difficulties as regard water. The shareholders are chiefly wealthy merchants, and the managing director is full of energy and hope. There is evidently an extensive field open for lead mining on the banks of the Tamar and in the North of Cornwall, and thus when we find that such persevering, intelligent, and practical miners as Messrs. Josiah Hitchens and Richard Pryor directing their attention thereto, we may reasonably expect to hear of early and good results.
R. TREDINNICK,
Mineowner and Consulting Mining Engineer
38, Cornhill, London, July 17.

LORDS' DUES, &c.

SIR,—The writer who subscribes himself "Pro Bono Publico" in last week's Journal does indeed deserve to be called a friend of the public, for he writes for their good. The subject of dues, charges for damage to land, mine leases, and buildings has long occupied my attention, and it should be so fully pressed on the attention of the landowners as to bring them into the mind to show greater liberality to mining lessees and companies. Let us look at several points:—

1.—Dues at present are charged on all minerals raised from the mines, varying from one-eighth to one forty-eighth of the money realised by sale of the ores, no matter what the circumstances of the mine may be. The adventurers may be losing 2000*l.* per month; the lords in general care not for that—the dues must be paid, except in some cases where the lords reduce or suspend the dues "during pleasure;" and that is considered an act of wonderful liberality. The terms on which leases are now granted should be revolutionised; no dues should be paid except out of profits. Why should there be? The adventurers pay all the cost of discovering and raising the ores, the lords paying nothing; so that the adventurers may be said to be speculating for the lords as well as for themselves. The dues should be charged on profits only.

2.—Damage to Land: The present charge made by the lords is from 150*l.* to 500*l.* per acre, and that on land, in some cases, not worth 25*l.* per acre. This charge should be reduced to a fair commercial standard—to the market value of the land; but where the dues paid cover the amount no charge for land should be made. It must be observed that after the adventurers have paid full value for the land it is not theirs; they have no right in it after the mine has ceased to work.

3.—Mine Leases: At present the charges are excessively high; in some cases 40 guineas, down to 25*l.* I know a recent case where a company had to take up five leases of a mine in undivided land, each lease being charged for at about 30 guineas—150 guineas for authority to enter into the land. The lords should either join in one lease, or cause the charges to be reduced 50 per cent. The lawyers' bills should be reformed by directions from the lords; they can do it, and they alone.

4.—Mine Buildings: Under existing leases all the buildings—in some cases costing thousands of pounds—must be relinquished to the lord free from charge on the abandonment of the mine. Is there a reasonable man in the world who will state that that is fair? The lords should either buy the buildings, or allow the company to remove them. The right thing would be for the lords to grant the adventurers the usual building leases, that on retiring from occupation the buildings might be sold for the adventurers' benefit. The whole system at present is illiberal in the extreme, and in a great measure the adventurers' fault for not seeking more liberal terms by a representation of their grievances to the lords.
July 16. BONO.

PENSTRUTHAL CONSOLS.

SIR,—Like your correspondent, "Weekly Reader," in last week's Journal, I also am very sorry that Mr. Waddington's suggestions did not meet with a more liberal support at the hands of the present shareholders. But should they muster and adopt Mr. Waddington's suggestions, I trust they will carry them out in all their completeness, and have no regard to the hints thrown out by "Weekly Reader" relative to the machinery. Mr. Waddington evidently knows the district in which Penstruthal is situated, whether "Weekly Reader" does or not, and I should be very sorry to hear the shareholders had adopted steam-pumps in preference to the Cornish beam-engine. I have seen too many errors made in economising in this direction, and could point out instances where if shareholders had resolved to lay out their money in efficient machinery they would in all probability be to-day receiving dividends, whereas the whole machinery is under water instead. The first cost is cheapest. The steam-pump is useful in its proper capacity, but I am hard to believe their first inventor ever intended them to supersede the Cornish engine, or had the faintest idea of their being utilised for forking mines of such magnitude as Penstruthal. I admit the erections necessary for a Cornish engine are costly, as is also the engine itself, but it is not due always to be relied on, whereas the steam-pump is often useless by its valves being chipped or stuck, and if not speedily rectified is soon under water. This inexpensive machinery as mentioned by your correspondent is in the end most expensive. I contend if mining companies listened more to the practical advice of the miner instead of the high-pressure and steam-pump engineer, and put permanent plant on their mines at the start, there would not be so many short-lived concerns as we hear so often of, and in the long run a considerable amount of money saved that is now being thrown away on such like undertakings as Penstruthal would be in case the advice of "Weekly Reader" was adopted. Perhaps "Weekly Reader" would have no objection to take a contract to fork Penstruthal with the "beautiful steam-pump" as he terms it, and to keep it clear of water; but having seen the folly of such machinery for such like work I would suggest, were I a shareholder, that a clause be in-

serted in the contract note that he should pay all men hindered from working through water, and make compensation to shareholders for ores not raised through the men not being able to work. In conclusion, I beg to say that the steam pump is indeed useful in its proper capacity, but for the use "Weekly Reader" has marked out for it (and I am sorry to say many before him have found to their sorrow), is a waste of money, injury to the whole community, and ruin to the shareholders. I sincerely hope Mr. Waddington's suggestions will be carried out, and I think if there was any reform wanted in the method of forking mines he (Mr. Waddington), as being about the first to introduce boring machinery into Cornwall, would not be slow in adopting it. Penstruthal is situated in a district which of itself is enough guarantee as to its chances, and almost a surety of its being a prosperous concern, provided sufficient capital be forthcoming, and be judiciously and economically spent.—*July 15.* A MINER.

THE SCHOOL OF MINES—ENGLAND AND FRANCE.

SIR,—The mining public will have read with pleasure the suggestion made in the Journal of May 24 last that as in France, and in most continental countries, not even excluding one so backward as Russia, so also in England it would be well if official gratuitous assays and analyses were done by the School of Mines in Jermyn-street. The report of this branch of science in France made annually to the public by the Ecole des Mines constitutes a precious and indispensable source of information, and the three volumes published during the Universal Exhibition last year summarising the result of upwards of 20,000 investigations, and including besides all kinds of ores and mineral substances, also potable and mineral waters, is a splendid testimonial to the utility of such a branch of public service. It would be well and creditable to our official mining men if they had something similar to point to. It often happens that mine explorers have not the command of a laboratory, and not infrequently the expense of procuring the needful chemical guidance is beyond their pockets.

An auxiliary service of the kind recommended by you, Mr. Editor, would act most beneficially in the mining industry of the kingdom, and re-act with much credit and advantage on the School of Mines, which unhappily has been so slow in taking its due position in the educational system of the country. Further, such a public laboratory would provide that authority in mineral analysis the want of which is now so sadly felt. If, while the necessity for such industrial help is recognised in other countries it is ignored in England, what can be the use of complaining of our being outrun in the race in certain industries by other countries? One would suppose that the want complained of, Mr. Editor, would be all the more readily supplied that it is at last acknowledged by all that great evil has been caused to the country by the prodigious indifference of the Government to technical education.

I am fain to hope that you will be seconded as you deserve to be by all mining corporations, and that the matter will forthwith have due prominence given to it in Parliament.
Orenberg, June 20. URSA MAJOR.

OLD MINING LOCALITIES REVISITED.

SIR,—I have lately had opportunities of visiting old mining localities with which in past times I have been intimately connected. About three weeks ago, having heard of the decease of the greatest mining authority and engineer, certainly of the St. Austell district, perhaps of Cornwall, I took train to Par instead of St. Austell, my destination, to revisit the scenes of some of the late Mr. West's labours and triumphs, and am sorry there is no guiding spirit left to lead his connection.

To-day, having another chance, I rambled over the old Fowey Consols Mines, thinking of their past wealth and speculating on the possibility of their resuscitation, and again occupying the proud position they attained under West and Puckey, when, lo! who should I fall upon but Capt. Parkyn trying over some ore brought from a winze sinking below the adit level of an adventure called New Fowey Consols. I accepted his invitation to inspect, properly speaking, and the result is that only a little perseverance appears to be required to produce a great mine, such as Fowey Consols has been, and almost in the midst of the lodes of which New Fowey Consols is situated. The New Fowey Consols, in my opinion, is situated at a proper distance from the granite in this locality to produce ore, but the presence of such rocks of mineral as I saw to-day establishes the fact, and ends speculation.
DELTA.

THE LLANRWST DISTRICT.

SIR,—I am not disposed to rest quietly under the stigma of uncharitableness towards my brother agents, which your correspondent, "T. C.," attempts to fasten upon me in his letter in the Supplement to last week's Journal, as my letter of the previous week was not aggressive but retaliatory, and as I stated in that letter so I state now, "Example is better than precept." Why could not Capt. John Roberts have gone quietly along working his own mines, with all the splendid advantages he claims for them, and refrained from giving offence to his "brother agents" by making wanton allusions to their supposed inability? If there was ever a greater impropriety I have yet to learn of it. One would have thought that the smallest measure of prudence would have dictated a more politic course, if even "charity" was not one of his virtues. I fling back the charge of uncharitableness to its originator in this instance, and fearlessly appeal to those who have been observant of my conduct and attitude during my connection with the district if I have ever betrayed an unfriendly feeling towards any mine, or towards anyone officially connected with it, unless, as in this instance, it was stimulated by provocation. Some may have concluded, however, that there was nothing very flagrant in the insinuation which I resented; perhaps not, but there was a nastiness about proportioned to its bitterness, besides it was unrelieved by even the slightest tinge of that "charity" of which it would appear such a generous display is expected of me.

This I think will also dispose of Messrs. Watson's "We agree with our correspondent that Capt. Knapp is about the last person who should criticise estimates of the reports of other agents," as what I have already written goes to show that is precisely the position I occupy in this encounter. I dislike aggression, but for defensive operations I need not much external stimulus. "T. C.," it appears, would have you believe that because we have not yet realised all our expectations in the Llanrwst Mine I am consequently interdicted from defending it or myself from the insidious and sinister attacks of ill-disposed "brother agents." It would have been most injudicious on the part of Capt. Roberts to indulge in adverse allusions to mines, whether in his own district or elsewhere, on the ground that they could not be operated self-sustainingly at the present low price of produce, if even his own mines, or either of them, had attained to that most desirable position, but when the reverse is the case, as it is with him, the indulging of such a propensity is not only injudicious, but highly reprehensible. No less reprehensible is the perversion of truth, as "T. C." attempted. He stated that I said at our last meeting 10,000*l.* might be sufficient for my requirements. Now, I ask him if he was not aware at the time he penned that paragraph that he was stating what he knew to be untrue? I was asked a question specifically referring to a definitely large amount of work, thus—"How much capital will you require to sink the engine-shaft (say) 30 fms. deeper, provide the necessary pitwork, open up your levels at the 14 and at the adit, and of course the three additional levels which the sinking of the shaft 30 fms. deeper would provide for and necessitate, together with all the attendant expenses incident to the execution and accomplishment of that large amount of work?" And my answer, prefaced by the remark "I may as well ask enough," was "10,000*l.*," and I at once added—"That will be amply sufficient for all conceivable purposes." There was no indefinite "might be" in the case. The question was definite—so was the answer. I shall not parry the elaborate indictment of shortcomings which "T. C." with such scrupulous accuracy has recorded against me. They amount, however, in the aggregate to no more than a fault, and as that is the only one which has been or can be recorded against me, I advise him to be very careful of its preservation, as it may be useful to him on a future occasion, espe-

cially as there is not much probability of its being added to or repeated. That we have excellent machinery on the mine, and a valuable mine to be operated by it, is to me a very gratifying reflection, as it serves to show we have not frittered away the company's funds, but, on the contrary, have disposed of them to useful and beneficial purposes. I advise "T. C." in whatever mining enterprise he may be engaged, to go and do likewise.
Llanrwst Lead Mine, July 17. ROBERT KNAPP.

THE LLANRWST DISTRICT.

SIR,—Your meddlesome North Wales Correspondent has added to his other distinctions that of obtuseness. In his report, in last week's Journal, he states—"I do not understand Mr. Knapp in his letter on the Llanrwst district," &c. I regret my inability to enlighten him, but if he will take the trouble to look back over the files of the Journal to that of June 28, and inform me what he was referring to when he penned the following sentences he may possibly discover to what my remarks had reference:—"Mr. Knapp may rest assured that I am not the writer of the paragraph he alludes to, nor do I know the writer. Would it not be better to answer questions than to impute motives and call names?" Now, I desire to be informed to what all this refers, as my short letter in the Supplement to last week's Journal was in respect to it. But instead of acknowledging the error he had committed, and apologising to me for it, he affects an ignorance which, if imputed to him by anyone else would, I doubt not, be warmly resented. I hope he will not make a similar exhibition of the same quality in his next report by stating that he does not know to what this refers.

The problem he has adduced appears to be very characteristic, and of the class, I presume, from whence generally he derives his singular ideas and arrives at his no less singular conclusions—*vide* the following:—"The adoption and utilisation of wind-power for mining purposes has throughout the whole of the recent letters on the subject in the Journal been treated as an auxiliary power." Now, having in the most positive manner made that assertion, I desire to ask him if that is the conclusion he arrived at after reading the letter of Capt. John Roberts, in the Supplement to the Journal of June 21, to which I took exception in my letter of last week.

To show the utter fallacy of the above most positive and flippant assertion, I herewith furnish an extract or two from Capt. Roberts' letter above referred to. He wrote as follows: "I might name mines where steam-engines have been erected that are now suspended on account of the expense of working them with the present price of produce, now I can see no reason why these engines, with a slight modification, could not be driven by compressed air from a good windmill, the boilers serving as air receivers." Again, "Now there are but few mines in this part which have not some high hill or mountain within (say) half a mile. If a powerful windmill were erected there with a good air-compressor and a large receiver at some convenient place, the power thus produced would become steady, and could be transmitted to an engine at any distance without any perceptible loss. This seems to me to be superior to the pumping of water even if there is water at hand to a water-wheel, as the power in this way becomes steady, and can be transmitted to any distance. And should there be a time when the compressed air is too low, and the engine must go on, steam could be introduced into the same cylinder." Language like this appears to me to convey the idea that wind was intended as the principal motor, and steam as an auxiliary, if not altogether superseded by what is made to appear as the primary power. The expression—"Should there be a time when the compressed air is too low," &c., seems to imply a doubt in the author's mind as to whether there would ever be a time when steam would be required as an alternative.—*Llanrwst Lead Mine, July 17.* ROBERT KNAPP.

THE WENDRON DISTRICT—MEDLYN MOOR.

SIR,—I was sorry to see it stated that the adventurers have decided to suspend operations at the Medlyn Moor Mine, in the parish of Wendron. This will be the stopping of the last pumping engine in the once great mining district. The adventurers having so far withstood the great depression in mining I thought they would have kept the mine afloat, seeing that we have at present just the beginning of a better price for tin. I have heard the north lode has been intersected, but cannot tell for certain the number of fathoms driven on its course east and west. It has a very kindly appearance, and more than the usual size of the other lodes in the mine, being about 4 ft. wide. Lodes, as a rule, are not intersected in their richest points; but if the company have driven on its course sufficient to prove its value it must be best known to their agents, who are I should think quite trustworthy to judge any mining property; but we all know and will acknowledge if the lode does not contain sufficient tin to pay them nor any other agents can put the mineral in it. There has been a great amount of talk with the miners in the district about the junction of three other lodes at a certain depth. They seem to think that it would make one great and good lode below the junction; but this must be best known to those who have had the working of the mine from the commencement. The district must certainly feel the stopping of this mine, for I know if Medlyn Moor had pulled through the depression an adjoining mine would have followed suite. The company that have worked the Medlyn Moor Mine have certainly been the best that ever worked a Wendron mine under such difficulties, and I trust their next speculation will be a greater success.
Redruth, July 16. P. M.

EAST VAN MINE.

SIR,—No doubt many of the shareholders in this mine have watched the quotation of their shares gradually but steadily decline in value since the autumn of last year, until they are to-day nominally quoted at somewhere about 1*l.* I think this should not cause shareholders to get out of their holdings, for if they will refer to the report issued in March last they will see that the mining captains did not expect any favourable result until they got under the ore ground at a point 50 fms. east of engine-shaft. They have driven so rapidly that less than two months from this time should see the result of that operation. The shares should consequently, it seems to me, have rather improved than declined in value, as it is unreasonable to look for any favourable signs until the miners are in close proximity to the place where they expect to find the mineral deposit. The depression cannot be traced to a plethora of shares being thrown on the market, for of a small parcel of 50 shares purchased by me in April last 20 still remained undelivered. Any intending sellers will, therefore, do well to bear the above facts in mind, and to remember that on the eve of the heavy rise in 1878 shares were scarcely saleable at 10*s.* each.—*Great St. Helen's, July 14.* A. C. M. BOLTON.

[For remainder of Original Correspondence, see to-day's Journal.]

RAISING COAL CORVES.—The essential feature of the invention of Mr. C. JEANSON, of Paris, is the use of endless chains passing over and under pulleys at the pit's mouth or other situation, and under a pulley at the bottom of the shaft, also in a guide fitted within the shaft for preventing the slip of the chain, should, say, the up running portion be weighted out of proportion to that of the other or down running portion, or *vice versa*. The endless chain or chains carry at intervals a series of projections which take hold of the trucks, wagons, or corves when they are pushed along a line of rails in proximity to the lower pulley, in order that they may be lifted. The trucks in the shaft while being lifted pass between pulleys which guide the chain or chains; these passing through a break or equilibrium apparatus to prevent them slipping should they be unequally weighted. The equilibrium apparatus is composed of a framework between which are chain wheels having sprockets or teeth to engage with the links of the chains, and against which rollers press to keep them in contact. The apparatus is suspended in the shaft and is under the control of weighted levers, which produce an equilibrium or balancing of the loaded trucks with the empty ones. When the trucks arrive out of the pit or shaft they pass between an upper set of pulleys, and become deposited upon the ground or upon rails to enable them to be moved away as de-

sired, each truck as deposited releasing itself automatically from its connection with the chains.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week investors have not been disposed to buy, owing to a renewed feeling of uneasiness regarding commercial and financial matters, and prices, therefore, have had a drooping tendency. The continued unfavourable weather is, perhaps, the chief cause of depression, as a bad harvest would lead to a further contraction of trade. Attention has also been taken up with the usual fortnightly settlement, and particulars of the continuation business done are given below; transactions are now entered into for next account, July 31.

In shares of coal and iron companies the principal movements are a rise of 7s. 6d. per share on Ebbw Vale, and a fall of 2s. on Bolckow, Vaughan, A. Benhar have been steady, selling from 2s. 2s. 3d. At the meeting of the Tredgar Company on July 28 a dividend of 2s. 6d. will be recommended for the year ended March 29 last, carrying forward 20,261. Bilboa Iron is 16; ditto 6 per cent. preference (50% paid), 40; ditto (35% paid), 25. Bolckow, Vaughan, A. 48 to 50; ditto, B. 29 1/2; ditto (stock), 100; ditto 5 per cent. preference, 19 1/2. Charles Cammell and Co., 80 1/2. Charlton, 5. Chapel House, 20s. to 25s. Cardiff and Swansea, 20s. Chillington, 37s. 6d. Ebbw Vale, 27s. 6d. John Brown and Co., 41 1/2. Marbella, 24s. to 26s. Muntz's Metal, 25s. prem. Nerubudda, 6s. 3d. Newport Abercrombie, Parkgate, 37 1/2. Pelsall, 11 1/2. Rotherham, Mashborough, and Holmes (6 per cent. preference), 40s. Rawyards, 10. Rhymney, 8 1/2. Scottish Australian, 35s. to 40s. Silkestone and Dodworth, 37 1/2. Sandwell, 18 1/2. Staveley, A. 5s. South Wales, 60s. In shares of foreign copper and lead companies, Huntington are 6d. higher per share, while Tharsis are reduced 10s., Panulillo 2s. 6d., and Canadian 6d. The returns of the Cape Company for May have been 1058 tons in all of from 28 to 35 per cent. The production of copper at Rio Tinto has been favoured by rain, and goes on at a rate beyond what was promised in the report. The price of the metal, however, keeps low, owing to large stocks, but a little improvement in trade would soon work them off, and a rise in price even to a moderate extent of course means great profits to the leading companies, such as Tharsis and Rio Tinto. Tharsis shares declined to 2 1/2, owing to there being a contango in them this time instead of a "back," but are now firmer. Alamillos, 25s. Condes de Chilli, 5s. English and Australian, 25s. Fortuna, 80s. Linares, 75s. New Quebrada, 42s. 6d. Rio Tinto 5 per cent., 60 1/2. Yorke Peninsula, 1s. 3d. to 3s. 9d.; ditto (pref.), 5s. to 10s.

In shares of home mines there is as yet no recovery in prices. Lead is stated to have had a gradual and considerable rise in America, so it is hoped the market here will follow. The Glasgow Caradon company's sale of copper ore to take place to-day is computed 150 tons; last month 180 tons were sold, and at this time last year 210 tons, while for several preceding years the sales in July have been from 240 to 245 tons. Assheton are at 15s. Aberdunant, 1s. 9d. Dolcoath, 2s. East Van, 15s. to 20s. Grant Laxey, 14s. to 15s. Gorse and Merilyn, 48s. Killbreth, 5s. Leadhills, 35s. Marbella, 24s. Pary's Copper, 10s. 9d. Penstruthal, 1s. 3d. to 3s. 9d. Roman Gravel, 8s. South Caradon, 50s. South Condurow, 11 1/2. Tankerville, 65s. Tincroft, 8 1/2. Van, 15 1/2. West Chilverton, 50s. Wheel Agar, 60s. Wheel Crebor, 50s.

In shares of gold and silver mines, Richmond, after being nominally 8 sellers, have been done at 8 1/2, which is a fraction lower; this week's run is \$55,000. Chontales has a loss in May of 300, and Javali a loss of 300, owing to a falling off in the quality of the ore, which is believed will be temporary. At Sierra Butte there is a profit in June of \$851, and at Plumas Eureka also the large profit of \$23,401. The clean-up at Original Amador Mine of London and California Company in June is estimated at \$7300. A 100% Second Mortgage Bond of the Cedar Creek offered at 12 1/2. Australasian Mines are 5s.; Almada, 6s. to 7s.; Argentine, 1s. 9d.; Birdseye Creek, 10s.; Chilingo, 7s. 6d.; Colorado, 3s. 6d.; Don Pedro, 14s. to 16s.; Eberhardt, 42s. 6d.; Exchequer, 2s. 6d. to 5s.; Flagstaff, 2s. 6d. to 5s.; Frontino, 42s. 6d.; J. K. L., 5s.; Javali, 4s. to 6s.; Pasternana United, 3s. to 5s.; ditto, 12 1/2 per cent. (pref.), 17s. 6d. to 22s. 6d.; Port Phillip, 8s. to 10s.; St. John del Rey, 20s.; United Mexican, 65s. In shares of oil companies Broxburn have declined 10s. per share, Young's Paraffin 5s., and Oakbank 6d. Young's Paraffin changed hands at 13 1/2, and still wanted at that price. Runcorn Soap and Alkali, 7 d.

There is no movement in shares of miscellaneous companies. Earle's Shipbuilding, 24 1/2. Milner's Safe, 7 to 8. In wagon companies Scottish have again been on offer at 9 1/2. Prices of others are—Birmingham, 13; Bristol and South Wales, 6 1/2; Gloucester, 8; Lancashire, 80s.; Lancashire and Yorkshire, 6 1/2; Metropolitan, 52s. 6d. prem.; Midland, 8 1/2; Railway Carriage, 75s.; Swansea, 30s.; and United States Rolling Stock, 15 1/2. In chemical companies' shares there is no important alteration. Lawes' (ordinary) remain at 7 1/2 to 8, and the preference shares are enquired for. Langdale's, 7 1/2. 6d.; and Newcastle (9d. paid), 40s.

On Contango day (Monday) the following were the rates of continuation current: Contangoes: 2 1/2d. on Benhar Coal; 1d. on Glasgow Caradon Mine; 1d. even on Huntington Copper; 1d. on Marbella Iron; 3d. on Richmond; 1s. 1d. on Tharsis Sulphur and Copper; 2d. on Oakbank Oil. Backwardations: 3d., 6d., 9d. on Young's Paraffin; 3d. on Uphall Oil. On comparing the making-up prices for the following shares fixed to day with those of the same shares at the previous settlement, the variations thus shown during the past account are: Tharsis (new) have advanced 8s. 1d. per share, Marbella 2s. 6d., Oakbank Oil 1s. 6d., and Young's Paraffin 7 1/2d.; on the other hand, Broxburn Oil have fallen 10s., Uphall 6s. 3d., Benhar and Monkland each 3s. 6d., and Tharsis 2s. 6d.; the remainder are unaltered—Canadian Copper, Glasgow Caradon, Glasgow Port Washington, Huntington, Richmond, and Rio Tinto.

THE ST. ETIENNE COMPANY OF FRANCE (Limited).—This is a coal company possessing a property situated at the south-western extremity of the Loire basin, of which 1161 acres are coal formation. It is divided into four sections, and they are only working one—Combe Blanche—at present, which contains five beds of coal. The first two beds (sometimes running into one) have an aggregate thickness of 3 ft. 3 in. to 9 ft. 9 in.; the third bed is 4 ft. 3 in. thick. The fourth bed, which is gas coal, is 6 ft. 6 in. thick; and the fifth bed is also 6 ft. 6 in. thick. The present output appears to be 100 to 115 tons daily, and is capable of being raised to 170 tons some. An expenditure of about 12,792l. will, it is expected, enable an output of 500 tons daily to be maintained. The coal in the whole property is estimated at nine million tons. The cost of working is said to be 8s. a ton, and the selling price not less than 11s. 8d. per ton. There is a protective duty in favour of the French coalowner. Thus it will be seen that the statements of the company's prospectus are of a somewhat favourable nature, but before investing in it people might do well to consult anyone with a practical knowledge of the coal trade. The capital is 100,000l. in 5s. shares, and 20,000l. in 10s. bonds, redeemable in three years, which bear 12 per cent. interest.

Per share.	Paid up.	Rate per cent.	Description of shares.	Last price.
10	25	5	Arnlston Coal (Limited)	5
10	25	4	Benhar Coal (Limited)	23s.
100	55	25s. 1/2	Bolckow, Vaughan, and Co. (Lim.) A.	50
10	10	10	Calcutta Gas Coal (Limited)	6 1/2
10	10	10	Chillington Iron (Limited)	40s.
10	10	10	Clyde Coal (Limited)	35s.
23	20	10s. 10d.	Ebbw Vale Steel, Iron, and Coal (Lim.)	27s. 6d.
10	7	nil	Fife Coal (Limited)	75s.
10	10	nil	Glasgow Port Washington Iron and Coal (L.)	45s.
10	10	nil	Ditto	42s. 6d.
10	10	nil	Lochore and Capledrae (Limited)	15s.
10	10	nil	Marbella Iron Ore (Limited)	25s.
10	10	nil	Monkland Iron and Coal (Limited)	24s.
10	10	nil	Ditto	47s. 6d.
100	100	nil	Nant-y-Glo and Blaenau Ironworks pref. (L.)	15 1/2
1	1	15	Omos and Cleland Iron and Coal (L. & Red.)	8s. 6d.
1	1	15	Scottish Australian Mining (Lim.)	37s. 6d.
1	1	10s. 10d.	Ditto	17s. 6d.
Stock	100	nil	Shotts Iron	60

Per share.	Paid up.	Rate per cent.	Description of shares.	Last price.
4	4	7 1/2d.	Canadian Copper and Sulphur (Lim.)	7s. 6d.
10	4	nil	Cape Copper (Limited)	28
1	1	nil	Glasgow Caradon Copper Mining (Lim.)	20s.
1	1	15s.	Ditto	11s. 6d.
10	10	10	Huntington Copper and Sulphur (L.)	6d.
10	10	10	Panulillo Copper (Limited)	20s.
10	10	10	Rio Tinto (Limited)	85s.
100	100	7	Ditto, 7 per cent. Mortgage Bonds	16 1/2
100	100	8	Do 5 p.c. Mor. Deb. (Sp. Con. Bds.)	70 1/2
10	10	17 1/2	Tharsis Copper and Sulphur (Lim.)	22 1/2
10	7	17 1/2	Ditto	15 1/2
1	1	1	Yorke Peninsula Mining (Limited)	3s. 9d.
1	1	1	Ditto, 16 per cent. Guaranteed Pref.	10s.
1	1	1	Australasian Mines Investment (Lim.)	5s.
5	5	10s. 1/2	Richmond Mining (Limited)	8 1/2
10	5 1/2	5	Broxburn Oil (Limited)	12 1/2
10	7	5	Dalnenny Oil (Limited)	7
1	1	15	Oakbank Oil (Limited)	59s. 6d.
1	5s.	2	Ditto	10s. 6d.
10	10	2	Uphall Mineral Oil (Limited) "A"	8 1/2
10	10	2	Ditto "B" Deferred	13 1/2
10	8 1/2	17 1/2	Young's Paraffin Light & Mineral Oil (L.)	10
50	25	5	London & Glasgow Engineering & Iron Shipbuilding (Limited)	20
7	7	10	Phospho Guano (Limited)	6
10	10	6	Scottish Wagon (Limited)	60s.
10	4	6	Ditto	60s.

NOTE.—The above lists of mines and auxiliary associations are as full as can be ascertained. Scotch companies only being inserted, or those in which Scotch investors are interested, and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.
Post Office Buildings, Stirling, July 17.

The Scottish American Investment Company usual interim dividend, at the rate of 10 per cent. per annum, has been declared, payable on Aug. 1.

GRYLLS'S ANNUAL MINING SHEET.

FROM JUNE 30, 1875, TO JUNE 30, 1876.

CONTAINING

The quantity of copper ore sold from each mine, British and Foreign—Average price per 21 cwts., and the amount of money—The average standard, produce, and price for the year, both in Cornwall and Wales—The total amount of ore, fine copper, and money—Each company's purchase—And the particulars of copper ores sold at the Ticketings in Cornwall from June 30, 1860, to June 30, 1879:—

Mines.	Ore (21 cwts.)	Amount.	Price.
Agar, Wheal	13	£ 58 16 0	£4 15 0
Basnet, Wheal	152	780 3 0	5 3 6
Bawden's Ore	37	18 10 0	0 10 0
Bedford United	656	2,242 16 0	3 8 6
Botallack	195	984 15 0	5 1 0
Calstock East, Wheal	17	83 0 0	3 2 6
Carn Brea	244	630 4 0	2 11 0
Conford, Wheal	97	352 10 0	3 12 0
Cook's Kitchen	187	39 0 0	2 2 0
Crebor, Wheal	659	1,322 19 0	2 7 6
Courtenay, Wheal	60	147 10 0	2 19 0
Devon Great Consols	8929	17,830 2 6	3 0 0
Dingle's Ore	24	9 12 0	0 8 0
Dolcoath	13	26 6 0	2 3 0
East Pool	2915	6,233 1 0	2 3 0
East Caradon	85	387 2 6	4 9 6
Glasgow Caradon	921	1,352 14 0	1 9 6
Great Cinnis & Carlyn Con.	2181	5,491 10 6	2 5 0
Gunnislake Clitters	1837	6,648 2 6	3 12 6
Harvey's Ore	41	38 19 0	0 19 0
Hingston Down	899	1,790 15 6	2 0 0
Kilbreth	10	30 10 0	3 1 0
Kitty, Wheal	16	78 0 0	4 17 6
Levant	552	3,675 6 0	6 9 6
Marke Valley	3582	11,486 18 6	3 4 0
Melland	6099	18,220 13 0	2 19 6
New Cook's Kitchen	134	675 7 0	5 0 0
New Consols	20	40 2 0	1 0 0
North Wheel Busy	104	386 15 0	3 19 6
North Trekerby	117	303 6 6	2 12 0
Owles, Wheal	181	470 0 0	2 12 0
Pedn-an-drea	3	15 18 0	5 6 0
Penhalls Mine	10	58 0 0	5 18 0
Penberthy's Ore	7	21 3 6	3 0 6
Pengelly's Ore	13	37 14 0	2 18 0
Penstruthal	61	115 3 0	1 18 0
Phenix Mine	448	2,708 7 0	6 4 6
Poldice	6	15 18 0	2 8 0
Pope's Ore	35	196 19 6	5 12 6
Rule and Williams' Precipitate	5	63 8 0	13 5 6
Russell, Wheal	22	24 4 0	1 2 0
South Caradon	5473	25,572 4 6	4 17 0
South Condurow	59	312 2 0	6 11 6
South Roskear	31	101 12 6	3 5 6
South Tolarne	39	124 14 0	3 9 6
Tavy Consols	23	1,519 10 0	2 10 0
Trekerby	119	217 2 0	1 16 6
Trekerby's Regulus	17	108 16 0	6 8 0
Trumpet Consols	1	20 1 0	20 1 0
Willington's Ore	2	11 17 0	5 18 6
West Basnet	28	70 17 0	2 14 6
West Godolphin	54	671 15 0	10 11 6
West Maria and Fortescue	19	0 0 0	0 10 0
West Roskear	49	64 11 6	1 11 0
West Wheel Basnet	79	221 10 0	2 17 0
West Wheel Seton	1542	5,775 12 0	3 15 0
West Wheel Tolgus	3181	17,222 12 0	5 8 6

Mines.	Ore (21 cwts.)	Amount.	Price.
Alcouth	115	£ 679 2 0	£5 18 0
Aljuel	411	1,840 4 6	4 5 0
Australian	351	911 13 0	2 11 6
Almador	25	518 2 0	20 15 0
Bampfyde	109	854 16 0	7 16 6
Bella Cove	32	197 12 0	6 3 0
Baldre	3099	12,210 16 0	3 19 0
Baldre	825	7,683 8 0	9 3 6
Berehaven	1462	8,209 17 6	5 12 6
Bogalho	289	4,440 17 6	15 0 6
Cambrian	129	1,029 14 0	7 19 6
Caveiro	4438	14,791 17 6	3 3 6
Cedra	65	280 16 0	4 17 0
Copper Ore	489	3,043 8 0	6 3 0
Copper Matt	91	733 15 0	8 1 6
Copper Precipitate	121	3,456 4 6	28 11 0
Copper Regulus	607	9,786 16 0	16 1 6
Copper Cement	22	381 2 0	12 15 6
Cronebane Precipitate	5	183 18 0	38 15 6
Emily Ore	77	302 2 0	3 18 6
Juliana	54	409 1 0	7 11 6
Knockmahon	431	1,358 0 0	3 11 0
Negrillo	59	85 11 0	1 9 0
New Quebrada	14	61 12 0	4 7 0
Sobral	174	1,280 8 0	7 7 0
Spanish	3893	9,993 14 6	2 11 6
Tan-y-Bwlch	158	1,087 8 0	6 17 6
Trigony Precipitate	49	751 18 6	15 7 6
Telhadda	126	679 10 0	5 8 0
Union Ore	3930	21,770 10 0	5 10 6
Var Ore	108	812 10 0	7 5 6
Vignasse Precipitate	218	3,514 12 0	16 2 6
Vineburg	700	5,789 5 0	8 5 6

Copper Ores sold in Cornwall, from June 30, 1875, to June 30, 1879.	Average produce	Average standard	Average price
Copper ores	44,788 (21 cwts.)	7	£36 14 0
Fine copper	3129 tons 2 cwts.	7	£36 14 0
Amount of money	£ 148,157 8 0	7	£ 3 6 0

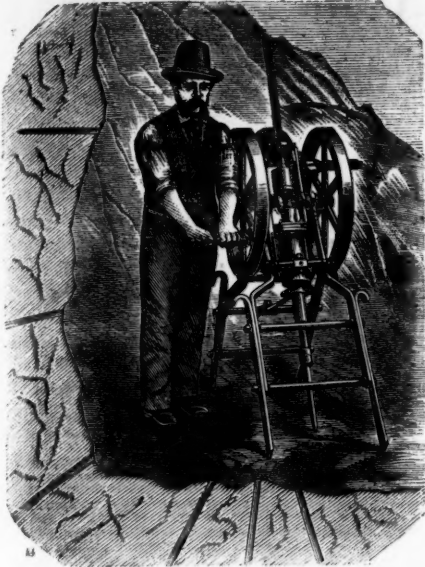
Copper Ores sold in Wales, from June 30, 1875, to June 30, 1879.	Average produce	Average standard	Average price
Copper ores	22,679 (21 cwts.)	9 1/2	£75 1 0
Fine copper	2237 tons 12 cwts.	9 1/2	£75 1 0
Amount of money	£ 118,783 10 6	9 1/2	£ 5 4 6

Totals in Cornwall and Wales.	Average produce	Average standard	Average price
Copper ores	67,467 (21 cwts.)	8 1/2	£366 14 0
Amount of money	£ 266,940 18s. 6d.	8 1/2	£ 12 11 6

Copper Ores purchased by the Copper Companies from June 30, 1875, to June 30, 1879:—	Ore (21 cwts.)	Tons copper.	Amount.
Purchasers.			
Vivian and Sons	11,337	855 5	£ 40,884 15 0
Pascoe Grenfell and Sons	8,030	717 3	£6,226 13 4
Nevill, Druce, and Co.	9,888	701 18	£3,386 6 10
Williams, Foster, and Co.	19,997	1685 15	£4,907 12 2
Copper Miners' Company	3,503	288 19	£1,182 17 11
Mason and Elkington	8,539	653 13	£2,366 19 5
Clayton and Co.	1,800	150 12	£1,420 11 11
Sweetland and Co.	2,110	150 12	£7,841 19 0
Landore Smelting Company	2,069	210 12	£1,512 18 11

Copper Ores sold at the Ticketings in Cornwall, from June 30, 1860, to June 30, 1879:—	Ore (21 cwts.)	Money.	Produce.	Standard.
1860	180,448	£1,079,403 4 6	6 1/2	£133 18 0
1861	176,097	1,013,400 5 6	6 1/2	130 1 0
1862	186,662	977,017 2 6	6 1/2	127 13 0
1863	176,286	872,474 4 6	6 1/2	120 9 0
1864	166,707	868,586 1 0	6 1/2	124 17 0
1865	164,940	806,833 10 0	6 1/2	125 3 0
1866	148,777	678,641 3 0	6 1/2	118 7 0
1867	125,679	547,689 8 0	6 1/2	107 1 0
1868	121,815	554,029 19 0	6 1/2	110 15 0
1869	103,199	430,749 10 6	6 1/2	103 3 0
1870	90,227	374,612 0 6	6 1/2	98 12 0
1871	74,367	292,122 4 6	6 1/2	99

QUARRYING MACHINE.



HAND-POWER ROCK DRILL COMPANY, LIMITED.

FOR THE

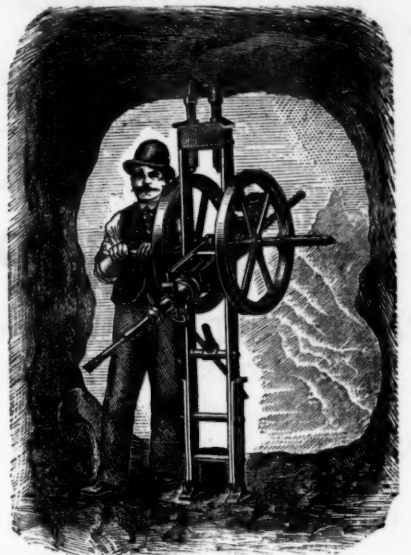
LATEST TESTIMONIALS AND
REPORTS OF PRACTICAL WORK

APPLY TO

T. B. JORDAN, SON, & MEIHE,

63, QUEEN VICTORIA STREET,
LONDON, E.C.

TUNNELLING MACHINE.



JORDAN'S PATENT "DEAD-BLOW" HAND-POWER ROCK DRILL.

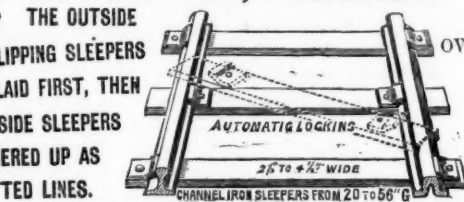
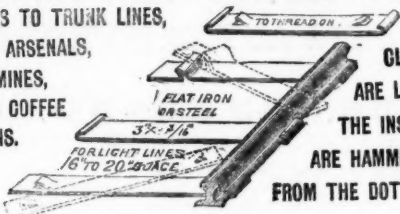
PATENT GOLD REDUCING MACHINERY AND GENERAL MINING PLANT.

PRICES COMPLETE, £55 TO £70.

A NARROW GAUGE RAILWAY

—LECRAND'S PATENT— COMPLETE IN TWO PARTS, From £250 per Mile.

WROUGHT IRON SLEEPERS TO FIT ANY RAIL, DISPENSING WITH SPIKES AND ALL LOOSE PIECES.
FOR FEEDERS TO TRUNK LINES, QUAYSIDES, ARSENALS, FORESTS, MINES, SUGAR AND COFFEE PLANTATIONS.



OVER 1000 MILES
OF LINE ARE
NOW LAID WITH
THESE SLEEPERS.



FOR CONTRACTORS,
FORTIFICATIONS,
BRICKYARDS,
EARTHWORKS,
QUARRIES.

SOLE AGENTS, SHAW BROTHERS, BIRMINGHAM.
DRAWINGS & PARTICULARS ON APPLICATION. TO SAVE TIME, PLEASE GIVE GAUGE, WEIGHT OF RAIL AND KIND OF TRAFFIC.

MAY AND MOUNTAIN,

BIRMINGHAM,

Engineers, Millwrights, Ironfounders, Coppersmiths, and Boiler Makers.

SOLE MANUFACTURERS OF

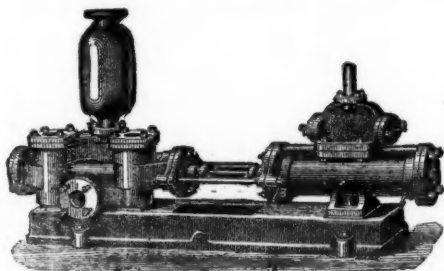
IMPROVED VERTICAL COLEBROOK'S PATENT STEAM PUMP. TORKINGTON AND HEY'S

DOUBLE-ACTING

STEAM PUMPS,

MADE IN ALL SIZES AND

COMBINATIONS.



Reliable and Economical—Short Pistons and Long Strokes—Slide Valve worked by Steam alone,
without Tappets, Levers, or Valves.

Adapted for all purposes and to all circumstances.

TORKINGTON & HEY'S

PATENT LUBRICATORS,

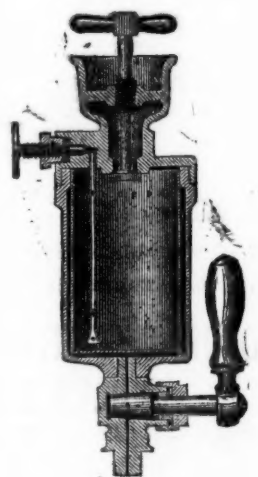
Entirely Self-acting. Flow of Grease regulated
by the Steam. Perfect Lubrication.

Greatest possible Economy.

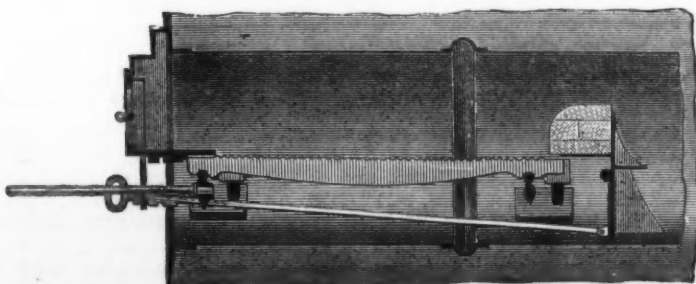
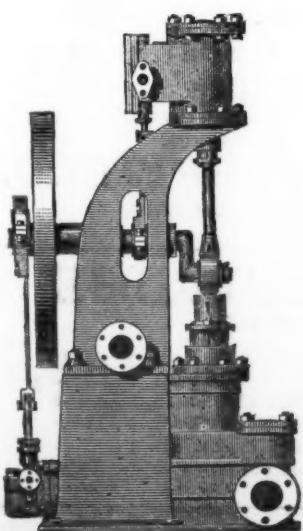
PRICES OF A FEW LEADING SIZES.

Steam cylinder.	Water cylinder.	Stroke.	Gallons per hour.	Price.
3	1½	12	720	£16
4	2	18	1,260	19
4	4	18	5,040	25
6	4	18	4,280	33
6	6	18	9,660	41
8	6	18	7,920	50
10	8	18	12,060	80

PATENT.



PRICES ON APPLICATION.



IMPROVED SMOKE PREVENTING FIRE BARS.

TO SUIT ANY
FLUE
OR
FURNACE.
—
PRICES
ON
APPLICATION.

PRICES OF LUBRICATORS.

No.	Horse-power.	Price.
1	Agricultural	7s. 6d.
2	Engines...	10 0
3	5 to 7	20 0
4	7 10	25 0
5	10 20	30 0
6	20 30	37 6
7	30 50	47 6
8	50 70	60 0
9	70 100	85 0
10	100 200	110 0

At the PARIS EXHIBITION the Jurors have Awarded

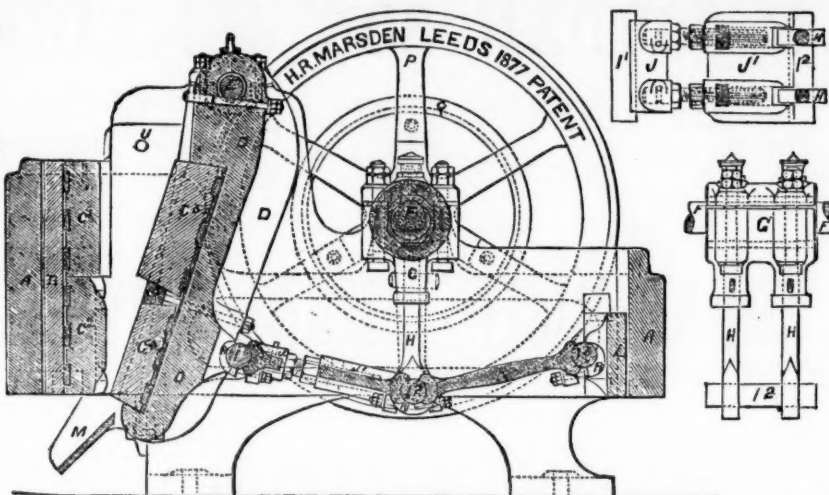
THE GOLD MEDAL, THE SILVER MEDAL, AND HONOURABLE MENTION

FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

Improved Patent Stone Breakers & Ore Crushers.**New Patent Reversible Jaws,
in Sections, with Patent
Faced Backs.****NEW PATENT ADJUSTABLE
TOGGLES.****OVER 2500 IN USE.****New Patent Draw-back
Motion.****NEW PATENT STEEL TOGGLE BEARINGS.****70****PRIZE MEDALS.**

READ THIS—

Wharholme Lime Works, Maryport, Whitehaven,
November 7, 1878.

H. E. MARSDEN, Esq., Soho Foundry, Meadow-lane, Leeds.
DEAR SIR,—The machine I have in use is one of the large
size, 24 in. by 12 in. The quantity we are breaking daily with
this one machine is 250 tons, the jaw being set to break to a
size of 2½ in. We have, however, frequently broken over
300 tons per day of ten hours, and on several occasions over
350 tons during the same period. The stone we break is the
blue mountain limestone, and is used as a flux in the various
ironworks in this district. We have now had this machine in
daily use for over two years without repairs of any kind, and
have never had occasion to complain of any inconvenience in
using the machine. I hope the one you are now making for
me may do its work equally well. The cost—including EN-
GINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES
OF EVERY KIND—is just 3d. per ton. Should any of your
friends feel desirous of seeing one of your machines at work,
I shall have much pleasure in showing the one alluded to.

I am, dear Sir, yours very truly,
WILLIAM MILLER.

AND THIS—

Wharholme Lime Works, Aspatria, Cumberland,
July 11th, 1878.

H. R. MARSDEN, Esq., Soho Foundry, Leeds.
DEAR SIR,—We are in receipt of your letter of 4th inst. I
may just state that the stone breaker above named has been
under my personal superintendence since its erection, and I
have no hesitation in saying that it is as good now as it was
five years ago.

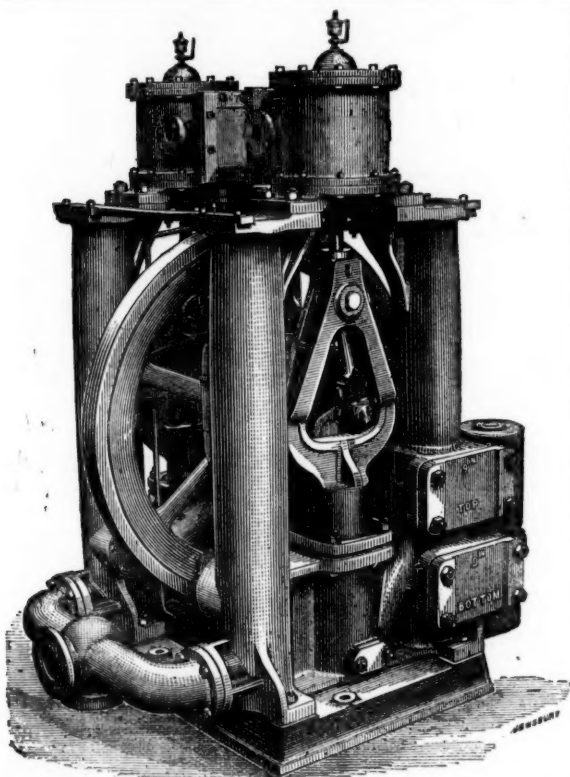
I am, dear Sir, yours faithfully,
FRANCIS GOULD.

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.

STEAM PUMPS for COLLIERY PURPOSES, specially adapted
for Forcing Water any height; also for Sinking; and for Feeding
Boilers.

JOHN CAMERON has made over SIX THOUSAND.

WORKS: OLDFIELD ROAD, SALFORD, MANCHESTER.

**SOLID DRAWN BRASS AND COPPER
BOILER TUBES,**

FOR LOCOMOTIVE AND MARINE BOILERS

EITHER

MUNTZ'S OR GREEN'S PROCESS**MUNTZ'S METAL COMPANY (LIMITED),
FRENCH WALLS,
NEAR BIRMINGHAM.****THE GREAT ADVERTISING MEDIUM FOR WALES.
THE SOUTH WALES EVENING TELEGRAM**(DAILY), and
SOUTH WALES GAZETTE

(WEEKLY), established 1857.

The largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the
second edition at Five P.M. On Friday, the "Telegram" is combined with the
"South Wales Weekly Gazette," and advertisements ordered for not less than six
consecutive insertions will be inserted at a uniform charge in both papers.
P. O. O. and cheques payable to Henry Russell Evans, 14, Commercial-street
Newport, Monmouthshire.

THE NEWCASTLE DAILY CHRONICLE
(EST. 1764.)
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard street North
Shields; 195 High street, Sunderland.

THE "CHAMPION" ROCK BORERMINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIA-RUBBER HOSE, TESTED
IRON PIPES, &c.**Air-Compressing Machinery,**

Simple, strong, and giving most excellent results, and

ELECTRIC BLASTING APPARATUS.Full particulars of rapid and economical work effected
by this machinery, on application.

R. H. HARRIS, late

ULLATHORNE AND CO., Mechanical and Consulting Engineers,
63, QUEEN VICTORIA STREET, LONDON, E.C.

PARIS EXHIBITION,

HONOURABLE MENTION

Awarded to

SALMON, BARNES, & CO.

FOR THE PATENT

ROANHEAD ROCK DRILL,

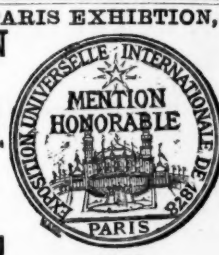
AND THE HIGHEST AWARD FOR

IRON AND WOOD REVOLVING SHUTTERS,

Worked by their PATENT BALANCE-WEIGHT MOTION.

**Canal Head Foundry and Engineering Works, Ulverston,
LANCASHIRE.**

1878.



1878.

GOLD MEDAL AWARDED, PARIS EXHIBITION, 1878.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.**CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL
MINING TOOLS & FILES of superior quality.**EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.**SHEAF WORKS & SPRING WORKS, SHEFFIELD.**LONDON OFFICES.—90 CANNON STREET, E.C. PARIS DEPOT.—12, RUE DES ARCHIVES.
NEW YORK STORE.—102, JOHN STREET.**J. WOOD ASTON AND CO., STOURBRIDGE**

(WORKS AND OFFICES ADJOINING ORADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES,

FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,

RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Orab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.

STOURBRIDGE FIRE BRICKS AND CLAY.